University of Helsinki
Faculty of Law

HOW FAR DO THE RESPONSIBILITIES OF A COMPANY GO IN REGARDS TO NEW INNOVATION AND PROCESSES IN INDUSTRIAL PROJECTS AND THEIR LICENSING?

Master's Thesis
Anette Biese
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Supervisor: Professor Ville Pönkä

HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

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Tiivistelmä – Referat – Abstract

The purpose of this thesis is to conduct research on the licensing of industrial projects and related requirements in Finland. The thesis will take a closer look at ten projects which have happened in Finland and the related environmental decisions. These environmental decisions set requirements by authorities which the companies have to adhere to in order to resume their practices and avoid sanctions. The thesis will have a closer look at these requirements from the viewpoint of the company and will further assess whether some of these requirements are too strict or futuristic and by that set too much responsibility on the company.

At the beginning of the thesis the environmental impact analysis procedure will be described as the consequent report is the basis for which environmental decisions are given on by the authorities of the relevant ELY Centres. After the procedure has been explained the thesis will describe the main requirements set in the ten different environmental decisions which have been assessed.

When assessing the requirements clear groupings could be found that reoccurred in the decisions. These were noise, waste, water, animal kingdom, emissions and reporting. Some of the requirements in these groups were very similar of nature and it could therefore be concluded that they were part of the norm in environmental requirements.

However, while conducting my research it became evident that a number of requirements did not manifest them in all the decisions but stood out easily. This is partly due to the fact that each decision has to be done on its own merits based on the location of the project site and the type of project. Different requirements sometimes had extremely similar justification which led to the question: is the justification of these requirements up to par, as one justification could be used for a number of different requirements.

It became apparent that the environmental decisions included requirements that could not necessarily be justified and therefore were setting too much responsibility on the companies. The companies have to take care of the environment but the reason for a requirement cannot be to set the company in a situation where they have to come up with new research methods and processes.

In the end, the research topic was extremely difficult as the comparison of the environmental decisions turned out to be problematic due to the different nature of the projects. This has led to the fact that no decisive answer can be given to the question of corporate responsibility but this thesis may function as the foundation of further discussions and research with narrowed down subject matter.

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environmental impact assessment, environmental decision, corporate responsibility, requirement management

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Tiivistelmä – Referat – Abstract

Tutkielmassani käsittelen teollisuusprojektien lisensointiin liittyviä vaatimuksia ja vastuita Suomessa. Tutkielma tutkii tarkempaan kymmentä eri projektia, jotka ovat toteutuneet Suomessa, ja niistä annettuja ympäristölupia. Ympäristöluvissa asetetaan yrityksille vaatimuksia viranomaisten toimesta joita yritysten tulee noudattaa, jotta teollisuusprojektin luvat pysyvät voimassa ja yritys välttyy sanktioilta. Tutkielmassa tutkitaan tarkemmin näitä asetettuja vaatimuksia yrityksen näkökulmasta ja arvioidaan onko osa vaatimuksista liian tiukkoja tai futuristisia ja näin ollen asettavat yrityksille liika vastuuta.

Tutkielman alussa kuvaillaan ympäristövaikutusten arviointiprosessi ja kuinka se tulee toteuttaa jotta yrityksen on mahdollista saada ympäristölupa, sillä ympäristöarviointiraportti toimii pohjana ympäristöluvalle kun ELY keskukset käsittelevät lupahakemusta. Prosessin kuvauksen jälkeen käydään pääpiirteet kaikista kymmenestä tutkitusta ympäristöluvasta ja nostetaan esille asetettuja vaatimuksia.

Vaatimuksista löytyi selkeitä ryhmiä, jotka toistuivat miltei jokaisessa ympäristöluvassa – melu, jätteet, vesi, eläinkunta, päästöt ja raportointi. Osa näiden ryhmien sisäisistä vaatimuksista olivat hyvin lähellä toisiaan ja näin ollen oli mahdollista vetää johtopäätös, että nämä kuuluivat vaatimusten normistoon.

Tutkimuksen aikana kävi kuitenkin selväksi, että oli myös huomattava määrä vaatimuksia jotka eivät toistuneet kaikissa luvissa vaan erottuivat helposti muista. Osasyy tähän oli se, että jokainen ympäristölupa perustuu projektisijainnin mukaan ja jokainen vaatimus pitää muokata soveltuvaksi nimenomaisesti kyseessä olevaan sijaintiin ja projektitarkoitukseen. Erilaisista vaatimuksista löytyi myös samankaltaisia perusteluja mikä puolellaan johti kysymykseen: onko vaatimuksien perustelu vaillinaista kun sama perustelu saattoi olla käytössä useaan eri vaatimukseen.

Kävi ilmi, että ympäristöluvista löytyi vaatimuksia joita ei välttämättä pystytä perustelemaan kunnolla. Näin ollen niiden voidaan väittää asettavan liian suurta vastuuta yrityksille. Yrityksien tulee huolehtia ympäristöstä mutta vaatimuksien perinpohjainen tarkoitus ei tulisi olla asettaa yrityksiä tilanteeseen jossa he joutuvat tekemään tutkimustyötä tai kehittämään prosesseja, joita ei ole aikaisemmin ollut.

Tutkimusaihe oli hyvin vaikea, koska erilaisien projektien ympäristölupien vertailu osoittautui ongelmalliseksi. Tämä johti siihen, että kaiken kattavaa vastausta yritysvastuun asemaan ei pystytä antamaan. Tutkielma voi kuitenkin toimia hyvin lähtökohtana tehdä aiheesta lisätutkimusta tarkemmilla rajauksilla.

Avainsanat – Nyckelord – Keywords
ympäristölupa, yritysvastuu, YVA, teollisuus projektit, lupavaatimukset, lisensointi, lupahakemus

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TABLE OF CONTENTS

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List of Abbreviations

BAT	Best available technology
Biovakka	Biovakka Suomi Oy
EC	European Commission
EIA	Environmental Impact Assessment
ELY Centre	Centre for Economic Development, Transport and Environment
EU	European Union
Fennovoima	Fennovoima Oy
Fortum	Fortum Power and Heat Oy
HaO	Hallinto-oikeus (Administrative Court)
KHO	Korkein Hallinto-oikeus (Supreme Administrative Court)
KKO	Korkein oikeus (Supreme Court)
Lemminkäinen	Lemminkäinen Infra Oy
MEAE	Ministry of Economic Affairs and Employment of Finland
Neste	Neste Oyj
NPP	Nuclear power plant
SEA	Strategic Environmental Assessment
Seinäjoen Energia	Seinäjoen Energia Oy
Stora Enso	Stora Enso Oyj
TVO	Teollisuuden Voima Oy
UN	United Nations

VHaO	Vaasan hallinto-oikeus (Vaasa Administrative Court)
VYO	Vesiylioikeus
YIT	YIT Oyj

1. Introduction

Industrial projects are a part of everyday life – these include projects to build houses, hospitals, factories, roads, power plants and the list goes on. In 2018 in Finland there was 325 000 individuals working in industrial projects in 26 998 different projects.[1] This is a multi-billion euro industry with projects from numerous amounts of different industrial fields.[2] These projects are usually large at scale which also leads to the fact that there is a lot of paperwork, applications and licensing that are involved before any of these projects can even think about beginning. No company or individual can decide on starting one of these projects on their own, instead they will need to contact the local authorities in order to receive the relevant permissions and licenses. Especially in Finland, these processes are rigorous and the authorities have a vast list of requirements that have to be met before any license will be granted. The authorities are also in a position that they can ask for more specific information, testing and procedures to be conducted by the party wishing to embark on the project.

Although the amount of licenses and permissions is vast, it is outside of the scope of this thesis to take into consideration all the licenses that need to be acquired in an industrial project. Therefore, this thesis will have a closer look at the Environmental Decisions which are based on the Environmental Impact Assessment (EIA) (in Finnish *Ympäristövaikutusten arviointi, YVA-menettely*) that have to be conducted by any company wishing to embark on an industrial project, specifically in Finland. These often come with a multitude of requirements that the company has to adhere to before the EIA shall be seen as adequate for the grant of an Environmental and Construction License or many other licenses for that matter. Some of these requirements are similar to all projects, and some will be specifically given for certain projects, based on e.g. the location of the project site.

This thesis will take a look at some industrial projects that are currently happening or have happened in Finland. The environmental decisions will be analyzed in order to find out if there are certain requirements that are reoccurring in all or most of the decisions given by the

[1] Tilastokeskus, https://www.tilastokeskus.fi/tup/suoluk/suoluk_teollisuus.html, accessed 20.2.2020.
[2] *Ibid*.

Environmental Authorities or on the flipside if there are some requirements that seem to be extravagant, unusual or even futuristic. It is clear that the authorities have to not only look at the situation that is today, but have to take into consideration also what may be in twenty or thirty years' time – most industrial projects may have an impact for up to a hundred year from the start of the project, so the decisions of the authorities are important and ought not to be taken lightly. The overall intention is to ensure that these projects have minimal impact on the environment, especially on a permanent basis.[3]

However, the issue that arises with the requirements given by the authorities is when they are indeed too futuristic. Can a company really be held accountable to fulfil requirements that are such in nature that no one has done such acts before? How far out of the scope of the company's industry can a requirement extend to? Innovation should be promoted, but can it be made a requirement? Not all companies have the know-how or resources to conduct experimental activities that no one has done before. Even if they did have the resources can it really be considered as being fair or justifiable when companies are expected to embark on scientific studies that in no way are part of the norm of what science in that particular field at the time of the EIA is. The big question therefore is: how much does a company have to do before it goes outside of their scope, even if the aim is to protect the environment?

1.1. Research Questions and Methodology

The main point of the environmental decision and related Environmental Impact Assessment is to analyze and compare the impacts that an industrial project will have on the surrounding environment. It is a matter for the relevant authority to determine what kinds of impacts are acceptable, how possible impacts may be mitigated and whether or not the impacts are justifiable at all. Especially with the ever-growing concern of climate change, the environmental impacts need to be evaluated in detail. Although these impact assessments are done all over the

[3] Ympäristöministeriö, https://www.ymparisto.fi/fi-FI/Asiointi_luvat_ja_ymparistovaikutusten_arviointi/Ymparistovaikutusten_arviointi, accessed 26.02.2020.

world, this thesis will have a narrowed down look at those that have been conducted in Finland by Finnish authorities in order to ensure the comparability of the decisions is clear and the room for error can be mitigated somewhat with not comparing vastly different scenarios.

The main research method that is used in this thesis is a comparative analysis. Different types of environmental decisions and their EIA's are assessed and compared to each other in order to find similarities as well as clear differences in the licenses granted by the relevant authorities. It should however be noted that these EIA's and licenses are not comparable to the full extent of their contents as the projects differ in nature, but are comparable in the sense that they are all industrial projects in Finland. The EIA takes into account not only the project, but the location, the usage, the environment around the project site among other things, which will make certain aspects non-comparable between the projects. Each of the compared EIA's, ten to be exact, will be briefly described and requirements pointed out so that the reader can understand what kind of project and what kind of company the EIA is in relation to. These chapters will also briefly discuss the requirements set on the particular decision giving the reader the opportunity to reflect on which ones keep appearing in more than one decision.

It should be noted that the analysis is conducted from the viewpoint of a company – how far should they be held responsible and accountable and how much can be expected from them. The environment is common to us all, and everyone should take measures to ensure that the environment stays safe and as unharmed as possible. However, there would be no society without an economy and vice versa.[4] As companies and the revenue they produce help the economy stay afloat it is important that these companies stay afloat as well.[5] This leads to the fact that if too rigorous requirements are set on the company, they will not be able to embark on new projects which in the end leads to less revenue for the company and by default usually less jobs open for the community. The acts of these companies are usually also helpful for the general society, so it is indeed a balancing act of how much of a toll can a project take on the environment while helping the society, and itself. Social responsibility is a key aspect in the general sense of corporate responsibility but surprisingly this does not appear in the decisions that were given in these specific projects.

[4] Bob Giddings, Bill Hopwood, Geoff O'Brien, 'Environment, economy and society: fitting them together into sustainable development' (Sustainable Development, Vol 27, No 1, 2019) 188.
[5] Brian R Cheffins, 'Law as Bedrock: The Foundations of an Economy Dominated by Widely Held Public Companies' (OJLS Vol 23 No 1, 2003) 5-15.

A noteworthy comment is also that not a lot of research has been done on company liabilities in relation to environmental decisions and the EIA procedure, nor is there a vast amount of conversation on the EIA procedure in general. This means that the sources and resources that were available for the research of this Master's Thesis may by somewhat old in time, but the thesis will try to reflect on any of this as much as possible to the current climate around this matter. This being said, when conducting a thesis within an area that is not highly researched, there can be more than one alternative to views points that will be considered to the same issue in order to try and paint a clear picture of the current situation.

Similarly to the amount of literature being scarce, the amount of court decisions for this specific area is not large at numbers. This thesis will however to the extent possible illustrate a few decisions and their outcomes.

2. Background

The entire process of the EIA started when a United Nations led environmental program UNEP (United Nations Environment Programme) concluded a platform for the EIA procedure in 1987.[6] The aim of such a program was to ensure that the projects are environmentally healthy and enhance sustainable development.[7] The process of the EIA has been agreed in a transboundary and cross-border context as well as in the Espoo Convention of 1991.[8] In addition, Finland has agreed on a separate agreement on the EIA with Estonia regarding transboundary effects.[9] Sustainable development is one of the core areas of the UN and their programs.[10] The EIA is indeed a major tool that has been integrated across the globe to ensure sustainable development needs are met so that they are not risking the environment.[11]

The starting point of many actions for projects these days is that a thorough EIA must be conducted, which has also been approved by the appropriate authority, for the purpose of limiting any possible impacts that may transpire to the environment as a result of any related activities.[12] This approved assessment is something that can further be made mandatory in order to receive licenses and grants related to the project at hand.[13] In Finland, the EIA is mandatory for all projects that can have significant impacts on the environment.[14] Obviously this is a matter of judgement of what constitutes "significant impacts", but it can easily be said that usually the bigger the project the bigger the need for an EIA. The EIA should be done as early as possible – basically, when it is still possible to change the entire location of the project if necessary,

[6] UNEP Governing Council, 'Environmental impact assessment' (14th sess, 1987, Nairobi).
[7] Erkki J Hollo, *Johdatus ympäristöoikeuteen* (3rd edn, Talentum, 2009) 63.
[8] Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 1991).
[9] Agreement on Environmental Impact Assessment in a Transboundary Context, SopS 51/2002.
[10] United Nations, https://www.un.org/sustainabledevelopment/sustainable-development-goals/, accessed 27.3.2020.
[11] Wiek Schrage, 'The Convention on Environmental Impact Assessment in a Transboundary Contezt' in Judith Petts (ed.), *Handbook of Environmental Impact Assessment, Volume II, Environmental Impact Assessment In Practice: Impact and Limitations* (Blackwell Science Ltd 1999) 85.
[12] Ismo Pölönen, *Ympäristövaikutusten arviointimenettely ympäristöoikeudellisena instrumenttina* (Joensuun yliopistopaino, 2004) 27.
[13] Ismo Pölönen, Juha Perho, *YVA-Oikeus, Uudistunut ympäristövaikutusten arviointimenettely* (Edita Publishing Oy 2018) 46.
[14] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 3§.

based on the results of the EIA.[15] The EIA is indeed working in such a way that it is a preventive tool and not a retroactive one.[16] The EIA ensures that such prevention is done in a way that is pragmatic, systematic and multidisciplinary.[17]

Countries may have their own EIA processes and how they choose to take it into consideration in their projects, therefore it is essential for any company embarking on any sort of project to make sure that they are fully aware of what process and which laws they need to adhere to in order to have a legitimate project plan. Especially in the European Union (EU) a vast amount of legislation is codified through directives which leads to rather similar laws being enacted in each Member State.[18] Finland has enacted both own national laws, as well as laws based on EU directives meaning that there are a variety of laws and regulations that have governed the EIA procedure in all the assessments that have been conducted by the reviewed companies in their respective projects.

Moreover, it needs to be taken into account that although the actual process of the EIA is based on legislation and confirmed procedures, large industrial projects will always have a significant media presence[19] – they impact lives of different amounts of citizens which may result in the steps the project takes making headlines in news outlets.[20] An ever-growing internet presence makes sure that information travels at very vast speeds meaning that companies need to be able to take care of their social presence as well in order to keep the support for their projects. Acceptance of the society in the neighborhood of the project site might be what in the end condemns or brightens the future of the project. Therefore, many projects and the companies behind them make it a priority to keep the citizens and society in the loop of what is happening around the project and its next steps.[21] This helps ensure trust and transparency between the company and the people.

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[15] *Ibid*, 15§.
[16] Ismo Pölönen, Pekka Hokkanen, Kimmo Jalava, 'The effectiveness of the Finnish EIA system – What works, what doesn't, and what could be improved?' (EIAR 31 (2011)) 120.
[17] John Glasson, Riki Therivel, Andrew Chadwick, *Introduction to Environmental Impact Assessment, Principles and procedures, process, practice and prospects* (2nd edn, UCL Press 1999) 4.
[18] August Reinisch, *Essentials of EU Law* (2nd edn Cambridge University Press 2012) 58.
[19] John Glasson, 'Large Energy Projects and Community Benefits Agreements – Some experience from the UK (EIAR 65 (2017)) 12.
[20] These headlines can be found far and wide, but some examples can be found in e.g. The Guardian (https://www.theguardian.com/environment/2015/aug/12/australia-has-denied-environmental-approval-to-just-11-projects-since-2000) and Balkan Green Energy News (https://balkangreenenergynews.com/ombla-hpp-environmental-impact-assessment-rejected/).
[21] See e.g. Fennovoima's magazine, distributed online and to the residents close to the project site, Fennonen. Fennonen can be found at https://www.fennonen.fi.

2.1. Governing Authorities

The governing authority for each industrial project will depend on a number of factors. One key factor is the type of industrial project that the company is undergoing. Mostly it is however only a matter of where the project site is located. The main authority included in the environmental decisions and the EIA procedure are the Centres for Economic Development, Transport and the Environment (ELY Centres).[22] What activities and how they ought to be conducted are also set under legislation so that all processes are equal.[23] If a project is considered as being a Nuclear Power Plant as per legislation[24] the appropriate authority will be the Ministry of Economic Affairs and Employment of Finland (MEAE).[25] The ELY Centre of choice will be dependent on where the project site is – Finland has 15 ELY Centres according to the Finnish regions.[26] The actual environmental decision that we are looking at in relation to these conducted EIA's are mostly made by Regional State Administrative Agencies and Environmental License Bureaus but the ELY Centres are the ones who act as the supervising authority for the actions.

If the project site is located in more than one ELY Centres region, these authorities are to decide together which Centre will be responsible for the project.[27] If there is an issue or no clarity regarding who is the appropriate authority, the Ministry of the Environment will decide which ELY Centre is to take the lead, keeping in mind that the Centre needs to have the resources and capabilities to do so.[28] The Ministry of the Environment will also decide the ELY Centre in case the ELY Centre of the project site region is also in charge of the planning and execution of the project.[29] The choices made by the Ministry cannot be appealed.[30]

[22] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 10.1§.
[23] Laki ympäristövaikutusten arviointimenettelystä 252/2017, Valtioneuvoston asetus ympäristövaikutusten arviointimenettelystä 277/2017.
[24] Ydinenergialaki 990/1987, 3.5§.
[25] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 10.1§.
[26] Centre for Economic Development, Transport and the Environment, https://www.ely-keskus.fi/en/web/ely-en/contact-information, accessed 2.4.2020.
[27] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 10.2§.
[28] *Ibid*, 10.3§.
[29] *Ibid.*
[30] *Ibid*.

Finding the appropriate authority is a key feature of the start of the project as they will be involved in the project throughout its life cycle. The company is responsible to submit information that the authority may want so that the project can keep evolving through the different stages. The authority will also have a say once the company applies for a construction license, and therefore the cooperation with the company responsible for the project and the authority is very important.

There is no specified EU authority that the companies embarking in industrial projects in Finland have to directly report to. However, the European Commission does hold a separate expert group both in relation to the Environmental Impact Assessment and the Strategic Environmental Assessment matters and processes.[31] The group's goal is to advise the Commission in relation to the implementation of the EIA and SEA Directives, how legislation should move forward in addition to coordinating with the Member States in related matters.[32] These experts are nominated by the Member States themselves.

2.2. Governing Legislation in Finland

Finland has a number of legislations that will need to be adhered to during the process of the EIA and the licensing of the industrial project as a whole. It is important to take into consideration both Finnish legislation as well as EU Directives in these industrial projects. It is not practicable to mention every single piece of legislation that is used in the EIA process as it depends vastly also on the type of industrial project. We will however mention those pieces of legislation that have a particularly important role in guiding the process.

The main pieces of legislation governing the actual EIA procedure are *Laki ympäristövaikutusten arviointimenettelystä 252/2017* (Act on the Environmental Impact Assessment Procedure) and *Valtioneuvoston asetus ympäristövaikutusten arviointimenettelystä*

[31] European Commission, https://ec.europa.eu/environment/eia/index_en.htm, accessed 4.4.2020.
[32] *Ibid.*

277/2017 (Finnish Governments Decree on the Environmental Impact Assessment Procedure). These will describe how the EIA is to be conducted as well as who should take part in addition to what needs to be included in the statements and reports. In addition to these specific EIA legislations there are *Valtioneuvoston asetus viranomaisten suunnitelmien ja ohjelmien ympäristövaikutusten arvioinnista 347/2005* (Finnish Governments Decree on Authorities' Plan and Programs Environmental Impact Assessments) and *Laki viranomaisten suunnitelmien ja ohjelmien ympäristövaikutusten arvioinnista 200/2005* (Act on Authorities' Plan and Programs Environmental Impact Assessments).

In addition to the EIA specific legislations, the process will take impact from laws relating to nature conservation[33], water and sea areas[34], nuclear energy[35] and so forth. These give more information on e.g. the types of environmental impacts that should be considered in the specific type of project at hand.

Moreover, there are also international conventions and directives governing the EIA procedure. A United Nations convention is the Convention on Environmental Impact Assessment in a Transboundary Context.[36] This will guide e.g. on the conducting of an International Hearing (see further details in Chapter 2.3.2.). The European Union has enacted a Directive relating specifically to the EIA as well.[37] The first Directive on the EIA is from 1985 but it has been repealed and amended subsequently.[38] Another Directive in relation to Environmental Assessment is the Strategic Environmental Assessment Directive.[39]

Both the national and international legislations give a basis for the entire EIA process and how one should go about it. They both hold relevance in the projects conducted in Finland and the responsible company should be sure to adhere to any and all.

[33] Luonnonsuojelulaki 1096/1996.
[34] Laki vesihoidon ja merenhoidon järjestämisestä 1299/2004.
[35] Ydinenergialaki 990/1987
[36] Espoo, 1991.
[37] Directive 2011/92/EU of the European Parliament and Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment.
[38] Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment.
[39] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.

2.3. Process of Environmental Impact Assessment

When the EIA is done in order to aid in the future licensing of an industrial project, the EIA will consist of two parts: the program stage and the reporting stage.[40] The EIA begins when an assessment program and an assessment report are delivered to the appropriate authority, which in Finland is usually the Centre for Economic Development, Transport and the Environment (ELY Centre).[41] In projects related to nuclear power plants the relevant authority will be the Ministry of Economic Affairs and Employment of Finland (MEAE).[42] Therefore, the nature of the project is a key factor when recognizing which authority the company should be in contact with.

The Finnish law *Laki ympäristövaikutusten arviointimenettelystä 252/2017* determines in its 14§ the six main categories that constitute the procedure considered to be the EIA. First is the drafting of the assessment program and assessment report.[43] Secondly, these programs and reports need to be communicated and a, sometimes international, hearing held.[44] The third step is for the relevant authority to check the program and report, as well as the input and opinions given in the hearing.[45] After this, the authority will give his statement on their findings.[46] The given statement will be followed by a synopsis of the significant environmental impacts the project will have by the same authority[47] and lastly, the coordinating authority will give a statement on their findings of all the relevant steps and with that give a detailed opinion which will be taken into account later in the application for the grant of licenses.[48] It is very important for all companies to ensure that all the steps of the EIA procedure are adhered to at the highest level of detail in order to safeguard the granting of an environmental license for their project. It

[40] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 14§.
[41] Ympäristöministeriö, https://www.ymparisto.fi/fi-FI/Asiointi_luvat_ja_ymparistovaikutusten_arviointi/Ymparistovaikutusten_arviointi/Hankkeiden_YVAmenettely, accessed 10.3.2020.
[42] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 10§.
[43] *Ibid*, 14.1,1§.
[44] *Ibid*, 14.1,2§.
[45] *Ibid*, 14.1,3§.
[46] *Ibid*, 14.1,4§.
[47] *Ibid*, 14.1,5§.
[48] *Ibid*, 14.1,6§.

should be noted that the EIA is not a direct document for the granting of a license, but it is however a precondition for various grants necessary for industrial projects.[49] The environmental decision are based on the EIA results, meaning that without an appropriate EIA no environmental decision can be given. It is also a required part for the decisions-in-principal given for example to new power plants but is conducted before any decisions for permits and licenses are done.[50]

2.3.1. Assessment Program and Assessment Report

2.3.1.1. Assessment Program

Before an Assessment Program is made the Company has to assess whether their project is EIA liable in the first place – requirements for such can be found e.g. in the EIA Directive.[51] Annex I to the directive sets out projects that will always require an EIA and Annex II describes projects where the EIA is subject to discretion.[52] The European Commission considers this process as "screening".[53] This screening will determine whether there are expected significant impacts on the environment due to the phases of the project.[54] In Finland the list of projects where the EIA will be mandatory is a little broader than that of the EU Directive.[55]

[49] Fennovoima, *Environmental Impact Assessment Report for a Nuclear Power Plant* (Fennovoima 2014) 35.
[50] Posiva, http://www.posiva.fi/en/final_disposal/nuclear_waste_management/permissions_and_procedures/environmental_impact_assessment_procedure#.XmdNMqgzZPY, accessed 10.3.2020.
[51] Directive 2011/92/EU of the European Parliament and Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU, Annex I-II.
[52] *Ibid*.
[53] European Commission, https://ec.europa.eu/environment/eia/eia-legalcontext.htm, accessed 11.3.2020.
[54] European Commission, 'Environmental Impact Assessment of Projects, Guidance on Screening' (European Union 2017) 10.
[55] Erkki J Hollo, *Ympäristö ja oikeus* (Forum Iuris, 2009) 97.

As previously has been stated, the aim of the EIA procedure is to reduce, or even fully prevent any negative impacts that a project may have on the environment.[56] This program is an essential part of the assessment and describes which different ways of concluding the project as well as impacts in the planning phase will be researched closer at a later stage in the timeline.[57] In the program are also included descriptions on how the sharing of information in relation to the assessment will be done with the local community affected by the project and how they can partake in the assessment itself.[58] The process of the EIA does not officially start within the appropriate authority until the assessment program has been delivered to the said authority.[59] This means that although the program is a mandatory part of the process, the activities done in the scope of generating this process are not considered as being part of the official EIA process.

The main requirement set on the Assessment Program is to first describe the project site at current, including the size and location, as well as the information of who is responsible for the project.[60] In addition, there needs to be a draft time schedule for design and construction.[61] Even if the company has already confirmed a location (within their own company strategy) they need to provide details of alternative locations that have been looked into[62] and information on probable required licenses and grants.[63] A description is also included which illustrates the current situation in the probable impacted zone[64] and a preliminary suggestion on the environmental impacts that will occur.[65] The procedure needs to be transparent so that the Assessment Program shows how the preliminary investigation have taken place[66] and what are the qualifications of those making these investigations.[67] Lastly, the Program needs to include an estimate of when the Assessment Report will be ready and how the actual EIA will be

[56] Ympäristöministeriö, https://www.ym.fi/en-US/International_cooperation/Environmental_impact_assessment, accessed 10.3.2020.
[57] Ympäristöministeriö, https://www.ymparisto.fi/fi-FI/Asiointi_luvat_ja_ymparistovaikutusten_arviointi/Ymparistovaikutusten_arviointi/Hankkeiden_YVAmenettely, accessed 10.3.2020.
[58] *Ibid.*
[59] Teknologian Tutkimuskeskus VTT, *FiR 1-tutkimusreaktorin käytöstäpoisto. Ympäristövaikutusten arviointiohjelma* (Pöyry 2013) 14.
[60] Valtioneuvoston asetus ympäristövaikutusten arviointimenettelystä 277/2017, 3.1,1§.
[61] *Ibid*, 3.1,1§.
[62] *Ibid*, 3.1,2§.
[63] *Ibid*, 3.1,3§.
[64] *Ibid*, 3.1,4§.
[65] *Ibid*, 3.1,5§.
[66] *Ibid*, 3.1,6§.
[67] *Ibid*, 3.1,7§.

conducted.[68] The projects responsible is already in this Program phase expected to produce a comprehensive and clear suggestion on the probable environmental impacts.[69]

Usually, the Assessment Program needs to be communicated to the public so that they are given an opportunity to receive a sufficient amount of information about the project in addition to how they can at a later date voice their opinions and ask any questions they might have.[70] This communication is done by the contact authority who also has to ensure that the Assessment Program is distributed appropriately in order to collect all relevant input.[71] This input is usually given by e.g. the authorities that will later on be the ones to review the application for different licenses.[72] The communication may be skipped at the Assessment Program phase if it can be considered as being evidently useless at this stage due to a similar communication having being made previously in accordance to legislation.[73]

Once the communities and other authorities have given their statements about the Assessment Program the responsible authority delegate is to give their own statement regarding the Program.[74] This statement will include comments on the accuracy and depth of the Program as well as how the necessary assessments will be conjoined with other legislation that pose requirements on the project.[75] This statement is then delivered to the project responsible, the relevant authorities and published on the website of the authority who issued the statement.[76] Transparency is a key factor in the process of EIA and the stages within. After all of these steps have been taken, the company can move forward into the process of drafting an Assessment Report.

[68] *Ibid*, 3.1,8§.
[69] Hallituksen esitys laiksi ympäristövaikutusten arviointimenettelystä ja eräiksi siihen liittyviksi laeiksi 259/2016, 62.
[70] Ismo Pölönen, *Ympäristövaikutusten arviointimenettely ympäristöoikeudellisena instrumenttina* (Joensuun yliopistopaino, 2004) 37.
[71] *Ibid*
[72] *Ibid*.
[73] Laki ympäristövaikutusten arviointimenettelystä 252/2017.
[74] *Ibid*, 18§.
[75] *Ibid*, 18§.
[76] *Ibid* 18§.

2.3.1.2. Assessment Report

The Assessment Report is described in Finnish legislation as being a document that is produced by the project responsible, where the project and its' alternatives and their environmental impacts are being assessed in a concise manner.[77] The project responsible means the company's representative in the matter – without a doubt the actual report will have a team of people working on it. The Report can be described as being a collection of documents – not just one long document.[78] This Report, as any part of the EIA, is clearly described in legislation setting minimum requirements as to what the Report must include.[79] It can also be considered as being more thorough then the Program is, and has sixteen different points that need to be included into the Report. These are briefly as follows:

1) Description of the projects and its purpose, details on the size, location, most important details (e.g. energy consumption), debris and emissions that may have an effect on the air, water and soil, as well as the construction and use phases and possible decommissioning details;[80]

2) Information regarding the project responsible, project schedule, the plans necessary for such schedule execution, grants and permissions given in relation to the project and if the project has any relations to other projects ongoing;[81]

3) Explanations on the project's link to Land Use Plans as well as plans and programs about the use of natural resources and protection of the environment;[82]

[77] *Ibid*, 2(4)§.
[78] Erkki J Hollo, *Ympäristö ja oikeus* (Forum Iuris, 2009) 97.
[79] Directive 2011/92/EU, Art. 5 and Valtioneuvoston asetus ympäristövaikutusten arviointimenettelystä 277/2017, 4§.
[80] Valtioneuvoston asetus ympäristövaikutusten arviointimenettelystä 277/2017, 4.1,1§.
[81] *Ibid*, 4.1,2§.
[82] *Ibid*, 4.1,3§.

4) Description of the current state of the to-be-impacted area, and indications of its potential development if the project does not go forward;[83]

5) An estimate on accidents and their consequences taking into account the risk ratio of the project when it comes to large accidents and natural disasters, as well as emergencies and necessary actions in relation to these – including prevention and mitigation measures;[84]

6) Assessment and description of the projects and potential alternatives sites' probable significant environmental impacts;[85]

7) Depending on the project, an evaluation and description of the cross-border environmental impacts;[86]

8) Comparison of the environmental impacts of the different site options;[87]

9) Information on the main reasons why the site was chosen out of the options, including environmental impacts;[88]

10) Suggestions as to actions that will be used to avoid, prevent, restrict or completely remove the identified significant environmental impacts;[89]

11) Depending on the project a proposal on how the significant environmental impacts will be monitored;[90]

12) Explanation on the phases of the EIA, including participation assessment, as well as how they relate to the planning of the project;[91]

13) List of sources that have been used in the making of the Assessment Report and its descriptions and assessments, a description of the methods used to identify, foresee and assess the significant environmental impacts and

[83] *Ibid*, 4.1,4§.
[84] *Ibid*, 4.1,5§.
[85] *Ibid*, 4.1,6§.
[86] *Ibid*, 4.1,7§.
[87] *Ibid*, 4.1,8§.
[88] *Ibid*, 4.1,9§.
[89] *Ibid*, 4.1,10§.
[90] *Ibid*, 4.1,11§.
[91] *Ibid*, 4.1,12§.

information on missing information and biggest concerns that were noticed when compiling the Report;[92]

14) Information of the qualifications of those who prepared the Assessment Report;[93]

15) Description of how the contact authority's statement about the Assessment Program has been taken into account;[94]

16) A common sense and descriptive summary of the 15 requirements set.[95]

These content requirements can also be found in the Finnish legislation in *Laki ympäristövaikutusten arviointimenettelystä 252/2017*.[96]

These requirements are largely derived from the EIA Directive as national legislation in Finland had to undergo amendments to be compatible with the new Directive.[97] The European Commission has held that the most important article in the explanation of the EIA is Article 3 of Directive 2011/92/EU.[98] As this is a Report that is extremely important to be done as accurately and as thoroughly as possible as it may deem the future of the project and how it is decided upon by the relevant authorities at later stages. Although the main target of the Assessment Report is to indicate the significant environmental impacts, it is important to also include, at least mostly, those environmental impacts that may not be considered as being significant.[99]

Once the Report has been made, it is to be delivered to the contact authority who will check the contents of the Report, have a similar hearing as with the Assessment Program and afterwards give their official statement to the project responsible.[100] As an official statement is given on this report it is of utmost importance that the company takes the time to conduct the research and planning in relation with due diligence and care. This official statement cannot be

[92] *Ibid*, 4.1,13§.
[93] *Ibid*, 4.1,14§.
[94] *Ibid*, 4.1,15§.
[95] *Ibid*, 4.1,16§.
[96] 19§.
[97] Directive 2011/92/EU.
[98] C-50/09 European Commission v Ireland; C-404/09 European Commission v Spain.
[99] Ismo Pölönen, Juha Perho, *YVA-Oikeus, Uudistunut ympäristövaikutusten arviointimenettely* (Edita Publishing Oy 2018) 101.
[100] Erkki J Hollo, *Ympäristö ja oikeus* (Forum Iuris, 2009) 98.

appealed.[101] Although this statement is not binding, the statement acts as a major part of whether or not the EIA can be seen to have adhered to the relating legislation.[102]

2.3.2. International Hearing

Once the Assessment Program and Assessment Report have been concluded and evaluated, it is time to have a hearing on the matter. More often than not this hearing will also be an international one due to the potential cross border effects. The organizing of this hearing is the responsibility of the responsible authority delegate.[103] Whether or not there will be cross border effects is usually largely dependent on where the project site is located.

As was previously described in relation to the Assessment Program hearing, the hearing for the ready and evaluated Assessment Report is generally the same.[104] Participation in this screening process is largely limited to the opportunity of giving comments or appealing, as well as consultations of some form.[105] It is an important part of the EIA to give the public the opportunity to in a way say their peace about the project as well as raise their concerns that may have arisen once the Assessment Program and Report have been made publicly available for their evaluation.

If there is reason to believe that the impacts and effects that may occur will also have effects abroad it is important to make the hearing international at nature so that all of those effected regions will have the opportunity to receive the answers that they may need to get the full picture on the project. The documents have to be made publicly available and usually this is done by publishing them on the announcing authority's website, and in some cases also in

[101] KHO:1996-T-2779.
[102] Ismo Pölönen, *Ympäristövaikutusten arviointimenettely ympäristöoikeudellisena instrumenttina* (Joensuun yliopistopaino, 2004) 41.
[103] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 20§.
[104] Valtioneuvoston asetus ympäristövaikutusten arviointimenettelystä 277/2017, 5§.
[105] Judith Petts, 'Public Participation and Environmental Impact Assessment' in Judith Petts (ed.), *Handbook of Environmental Impact Assessment, Volume I, Environmental Impact Assessment: Process, Methods and Potential* (Blackwell Science Ltd 1999) 154.

newspapers of the effected region, or in any other way that the authority deems appropriate and necessary.[106] These documents have to be available for a minimum of 14 days.[107]

The Ministry of Environment is obligated to inform the authorities of the States party to the Espoo Convention of any environmental impacts that may affect their States in addition to letting relevant companies and communities be part of the EIA.[108] The Assessment Report is made available to these States so that they can choose whether or not they wish to be part of the whole EIA procedure.[109] The Ministry of Environment will later on give the statements and opinions given by the other States to the coordinating authority of the project.[110] This is given to the coordinating authority to be able to ensure that these opinions will be included in the authority's statement.[111]

In cases where another State has decided that they wish to be part of the EIA procedure the responsible authority will deliver the Assessment Report to the Ministry of Environment who will then deliver the Report to the State with appropriate translations included.[112] This ensures that the State will receive the relevant information in a timely manner and be able to give their opinions and ask any questions they may have or bring out any impacts that they have identified as potential risks.[113]

2.3.3. Coordinating Authority Check and Statement on Findings

Once the company responsible for the project has delivered the Assessment Report to the appropriate authority the authority will take the time to go through the report and give a

[106] Hallintolaki 434/2003, 62a.1§.
[107] *Ibid*, 62a.2§.
[108] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 28.2§.
[109] *Ibid*, 29.2§.
[110] *Ibid*, 29.3§.
[111] Ismo Pölönen, Juha Perho, *YVA-Oikeus, Uudistunut ympäristövaikutu sten arviointimenettely* (Edita Publishing Oy 2018) 171.
[112] *Ibid*, 172.
[113] Espoo Convention, art. 5.

thorough opinion on whether or not the report is sufficient and broad enough to be adequate for consideration.[114] The authority will deliver their opinion and any other opinions and statements that may have been given to the project responsible person who will simultaneously after receiving them, deliver the documents to any authorities, communities and districts that are part of the project and it's licensing.[115] This check and statement is an integral part of the EIA as it is a safeguard that the process will be good enough for the company to be able to apply for a construction license.

The coordinating authority has an obligation to make their statement publicly available[116], e.g. on their website, but the difference from the hearing materials is that this statement needs to be available for at least 30 days.[117] Any personal information (i.e. the name of the project responsible from the company and the location of the site) have to be deleted from the authority's website once the 30 day period has expired.[118]

In case the coordinating authority is unable to make a reasoned statement with the Assessment Report that they are given, they are to inform the company responsible to which extent the report will need further work.[119] Once additions and modifications have been made to the report, it will again need to be made available as per 20§ of the *Laki ympäristövaikutusten arviointimenettelystä.* The authority will then give their statement of the report in accordance to 23§ of the same law. One of the most important parts is that the environmental impacts are clearly distinguished and explained in the report to give an adequate picture of the impacts of the project.

2.4. Licensing of Industrial Projects

No industrial project will be able to ever begin without obtaining the proper licenses for their projects – most importantly the construction license and the operation license. When a company

[114] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 23.1§.
[115] *Ibid*, 23.2§.
[116] Hallintolaki 434/2003, 62a.1§.
[117] Laki ympäristövaikutusten arviointimenettelystä 252/2017, 23.3§.
[118] *Ibid*, 23.3§.
[119] *Ibid*, 24§.

starts their project in the industrial industry, the first step they need to take is to research what they need to have in order to be able to get a construction license granted. This process will be largely dependent on where the project site is located and what kind of industrial project it will be – the process is vastly different for e.g. building a distillery than it is for building a power plant or a large scale factory.[120] The company will need to get environmental grants, electricity grants, employee grants and the list just keeps going on.[121]

Most of these grants come from a different authority specialized in that specific area of information and processes. The company is required to go through the process of each and every one of the grants they need before they can apply to the local authority for a construction license – or at least before such a license can indeed be granted. Industrial projects are quite self-explanatorily within the need for a construction license. If any sort of building is being built it will need a construction license.[122] In addition to looking at these construction legislations, it will play an important role to look at the entire set of legislations around the entire project.[123]

Licensing plays an extremely important role, and when it comes to that, it can be said that the roles and responsibilities of companies go very far and wide. A properly conducted license application will be key once the project moves forward.

[120] Suomi.fi, https://www.suomi.fi/yritykselle/luvat, accessed 4.4.2020.
[121] *Ibid*. This website grants the opportunity to look up different types of projects happening in Finland and will describe what kind of licenses and grants will be needed for the said project.
[122] Maankäyttö- ja rakennuslaki, 132/1999, 125§.
[123] Pekka Hallberg, Auvo Haapanala, Ritva Koljonen, Hannu Ranta, Jukka Reinikainen, *Maankäyttö- ja rakennuslaki* (3rd edn, Alma Talent 2015) 16.

3. Finnish Environmental Decisions

In this chapter of the thesis, we will have a closer look at ten different environmental decisions and related EIA's that have been given by the appropriate authorities, and monitored by ELY Centres for the project or the MEAE specifically in Finland. These will only be brief overviews to point out what kind of requirements have been inflicted on the companies, so that they are identified for the reader and will be clear once the following part of this thesis goes on to evaluate whether or not these can be considered as being fair and reasonable on an industrial company. The list of requirements mentioned here will not be exhaustive.

These ten projects have been chosen at random, but give somewhat of an emphasis on energy related projects in order to be able to make comparisons that are indeed comparable as the nature of the project includes same subject matters. Furthermore, it needs to be highlighted and emphasized that no project will ever be comparable in its entirety and this became evident while conducting this research.

3.1. Fortum Loviisa

Fortum Power and Heat Oy (Fortum) is a clean-energy company from Finland, with operations in 10 different countries, aimed to develop and offer solutions in electricity, heating and cooling.[124] They operate over 150 power plants, but we shall take a closer look at the environmental decision of Fortum's two nuclear power plant units Loviisa 1 and Loviisa 2. The

[124] Fortum, https://www.fortum.com/about-us/our-company/driving-change-cleaner-world, accessed 4.4.2020.

decisions we are looking at are numbered as 23/2009/2 and 24/2009/2[125] and it is a revision of the original environmental decision given in 1995 numbered 64/1995/1[126]. Both of these decisions were given by Western Finland's Environmental License Bureau which no longer exists as such but has had their duties divided into the smaller authorities. The Loviisa nuclear power plant ('NPP') is located on the Hästholm Island in Loviisa.[127] There are eight different preserved destinations in the vicinity of the NPP.[128] Most of these are preserved under the Natura 2000 objective[129] and the EU Nature Directive.[130] While planning the NPP the key objective that had to be taken into consideration was that plant has to be safe and cannot cause harm to humans, nature or property.[131] This environmental decision was set under 28 different requirements.[132]

It has been seen that the functioning of a NPP has an effect on the fishes that are around the project site. Therefore, the first requirement that has been set on Fortum is to balance the effect on the fish.[133] At first the requirement was to plant 5 000 at least 20 cm long salmon and sea trout into the water area on a yearly basis.[134] This requirement was later on changed so that Fortum is to pay an annual amount of 10 000 EUR which is then used for the planting of more fish.[135] Fishermen are also entitled to compensation for the changes and losses that occur in their daily business due to the project.[136] In relation to water, requirements were also set stating maximum amounts of water that can be taken for the usage of the cooling system of the power plant as well as the effect that can be had on water temperature.[137] The location of the water tunnel for such activity has to be clearly marked and the water usage has to be monitored.[138] Restraints on sewage water are also applicable.[139]

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[125] Länsi-Suomen ympäristölupavirasto, Loviisan ydinvoimalaitoksen ympäristölupahakemus ja Länsi-Suomen vesioikeuden päätöksen nro 64/1995/1 tarkistaminen, Loviisa, 23/2009/2, 24/2009/2, [hereinafter Loviisa Environmental Decision 2009].
[126] Länsi-Suomen ympäristölupavirasto, nro 64/1995/1.
[127] Loviisa Environmental Decision 2009, 4.
[128] *Ibid*, 5-6.
[129] European Commission, https://ec.europa.eu/environment/basics/natural-capital/natura2000/index_fi.htm, accessed 6.4.2020.
[130] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.
[131] Ydinenergialaki 990/1987, 6§.
[132] Loviisa Environmental Decision 2009, 53-58.
[133] *Ibid*, 27.
[134] *Ibid*, 27.
[135] VYO 72:1999.
[136] Loviisa Environmental Decision 2009, 58.
[137] *Ibid*, 53-54.
[138] *Ibid*, 53.
[139] *Ibid*, 54.

Noise levels are set under requirements – the NPP cannot cause noise that exceeds 45dB during day time (7-22) and 40 dB during night time as an average point.[140] Noise levels have to be measured using a third party at certain intervals.[141]

The next requirement given is regarding waste. All waste that comes from the NPP should be aimed to be reused, and only waste that ultimately cannot be used again can be taken to the dump.[142] Problem waste has to be reported and stored accordingly.[143] Storage of other chemicals and fuel has also been regulated upon.[144] These have to be stored in a certain type of storage container.[145]

If there are any problems happening which result in requirements not being met, the responsible company has to take mitigation actions immediately.[146] If these are considered as being serious they will need to be reported to the appropriate authorities as well.[147] Keeping up with all of the requirements has to be done in a uniform and adequate manner. These are to be done taking into consideration all relevant CEN, ISO, SFS or equivalent standards.[148]

3.2. TVO Olkiluoto

Teollisuuden Voima Oy (TVO) is, similarly to Fortum, a Finnish company that produces nuclear energy, and with their NPP's, a sixth of Finland's energy consumption.[149] TVO has two NPP units – Olkiluoto 1 and Olkiluoto 2.[150] They are currently also in the process of building a

[140] *Ibid*, 55.
[141] Ympäristöministeriö, 'Ympäristömelun mittaaminen' 1/1995.
[142] Loviisa Environmental Decision 2009, 55.
[143] Valtioneuvoston päätösongelmajätteistä annettavista tiedoista sekä ongelmajätteiden pakkaamisesta ja merkitsemisestä 659/1996.
[144] Loviisa Environmental Decision 2009, 56.
[145] *Ibid* 2009, 56.
[146] *Ibid*.
[147] *Ibid*.
[148] *Ibid*, 57.
[149] Teollisuuden Voima Oy, https://www.tvo.fi/yhtio.html, accessed 6.4.2020.
[150] *Ibid*.

third one, Olkiluoto 3.[151] The decisions we are looking at are numbered as 11/2006/2[152] and 12/2006/2.[153] These decisions have been decided in unison in one EIA decision document by Western Finland's Environmental License Bureau. The complex of Olkiluoto NPP is located in Eurajoki on the Olkiluoto Island.[154] The Rauma archipelago is a preserved location[155] with the nearest islands to the NPP being approximately two kilometers from the site.[156] The key objectives, set by law, are the same for Olkiluoto NPP as they were for Loviisa NPP mentioned earlier.[157] This environmental decision was set under 31 different requirements.[158]

Maximum water amounts that can be taken for cooling water are given by the authority in addition to stating how much the surrounding water areas may heat up due to the functioning of the NPP.[159] Sewage water needs to be kept at low phosphoric levels keeping in mind also the pH of the water area.[160] Sewage waters need to cleaned and reported to the local authority respectively at least three months in advance.[161]

Noise levels are set under requirements – the NPP cannot cause noise that exceeds 45dB during day time (7-22) and 40 dB during night time as an average point.[162] Noise levels have to be measured using a third party at certain intervals.[163]

Waste that forms at the site has to be reused as much as possible – nothing that can be reused is allowed to be taken for burning.[164] Any problem waste that the NPP produces has to be reported and stored accordingly.[165] Specialized containers are to be used for the purpose of

[151] Nuclear power plant unit still in construction phase as of April 2020.
[152] Länsi-Suomen ympäristölupavirasto, Olkiluodon ydinvoimalaitoksen yksiköiden Olkiluoto 1 ja Olkiluoto 2 ympäristölupahakemus, Eurajoki, 11/2006/2, [hereinafter Olkiluoto Environmental Decisions 2006].
[153] Länsi-Suomen ympäristölupavirasto, Olkiluodon ydinvoimalaitoksen laajennuksen Olkiluoto 3 ympäristölupahakemus, joka sisältää ympäristönsuojelulain 101 §:n mukaisen hakemuksen päätöksen täytäntöönpanosta muutoksenhausta huolimatta, Eurajoki, 12/2006/2, [hereinafter Olkiluoto Environmental Decisions 2006].
[154] Olkiluoto Environmental Decisions 2006, 1.
[155] The archipelago is preserved under Natura 2000 objective and the EU Nature Directive.
[156] Olkiluoto Environmental Decisions 2006, 4.
[157] Ydinenergialaki 990/1987, 6§.
[158] Olkiluoto Environmental Decisions 2006, 65-69.
[159] *Ibid*, 65.
[160] *Ibid*.
[161] *Ibid*, 65-66.
[162] *Ibid*, 66.
[163] Ympäristöministeriö, 'Ympäristömelun mittaaminen' 1/1995.
[164] Olkiluoto Environmental Decisions 2006, 66.
[165] Valtioneuvoston päätösongelmajätteistä annettavista tiedoista sekä ongelmajätteiden pakkaamisesta ja merkitsemisestä 659/1996.

storing problem waste.[166] In addition to problem waste, any storage of chemicals and fuel is set under requirements to ensure proper practices are upheld.[167]

In case any problems occur that affect emissions or noise levels the Owner of the NPP is obligated to start mitigation actions as soon as possible in addition to notifying the appropriate ELY Centre as well as Eurajoki Council's environmental contact.[168]

Any reporting in relation to the NPP is subject to TVO made program on reporting that was attached to the EIA application.[169]

TVO is also liable to set up warning signs to warn about weak ice, as well as secure connections or boat docks for the island of Lippo and Iso-Susikari.[170] TVO is furthermore required to pay 10 000 EUR annually to compensate for the effects to the fishery status around the NPP.[171] In addition to this annual payment the company was also mandated to pay one off payments to the sum of 56 448 EUR for different owners of waterfront areas.[172]

3.3. Fennovoima Hanhikivi-1

Fennovoima Oy (Fennovoima) is another Finnish energy company that is at the moment in the midst of a project to build a nuclear power plant in Pyhäjoki in Northern Finland.[173] This NPP will have one nuclear power unit – Hanhikivi-1.[174] It is hoped that Hanhikivi-1 will help produce a tenth of Finland's electricity needs.[175] Fennovoima estimated that they will be granted

[166] Olkiluoto Environmental Decisions 2006, 67.
[167] *Ibid*.
[168] *Ibid*.
[169] TVO, Olkiluodon voimalaitoksen tavanomaisten päästöjen tarkkailuohjelma, 31.12.2002.
[170] Olkiluoto Environmental Decisions 2006, 69.
[171] *Ibid*.
[172] *Ibid*.
[173] Fennovoima, https://www.fennovoima.fi/fennovoima/fennovoiman-tarina, accessed 8.4.2020.
[174] Fennovoima, https://www.fennovoima.fi/hanhikivi-1/tietoa-hanhikivi-1-hankkeesta, accessed 8.4.2020.
[175] Fennovoima, https://www.fennovoima.fi/fennovoima/fennovoiman-tarina, accessed 8.4.2020.

the construction license in 2021 after which construction on the project site can commence.[176] The decision taken into consideration in this thesis context is 91/2016/1.[177] The Northern Finland Regional State Administrative Agency has however also decided on constructions works for the site and its dock so that the seabed could be dug.[178] The key objectives, set by law, are the same for Hanhikivi-1 NPP as they were for Olkiluoto NPP and Loviisa NPP mentioned earlier.[179] Around Hanhikivi-1 there are various protected areas: the Natura 2000 protected area of Parhalahti-Syölätinlahti Heinikarinlampi[180] and ten other areas that are protected under legislation.[181] This project was set 50 different requirements.[182]

The temperature of the coolant water is once again under requirements, as well as how much chemicals can be used in the water in order the clean it in addition to cooling it before it is directed back into the ocean.[183] These requirements give more detail as to what kind of water is to be used and how this water is to be cleaned when applicable.[184]

The construction of the water disposal system is set under a multitude of requirements that Fennovoima has to take into full consideration.[185] These are in relation to a building grant application made in 2015 for the related structure.[186] The area where the works are being done is required to be isolated for the duration of the works.[187] The works are not allowed to have an effect on the nearby nature.[188] It is essential that the 'license holder', i.e. Fennovoima, ensures that the built structures are kept up to code with the relevant standards and legislation.[189]

The diesel generators that are used are expected to be running at a yearly average, with a five year reporting period, of a maximum of 500 hours.[190] The flue gas has to exit the facility through

[176] Fennovoima, https://www.fennovoima.fi/hanhikivi-1/tietoa-hanhikivi-1-hankkeesta, accessed 8.4.2020.
[177] Pohjois-Suomen Aluehallintovirasto, Ydinvoimalaitoksen ympäristölupa ja toiminnanaloittamislupa sekä vesi-lain mukainen lupa meriveden ottoon, Pyhäjoki ja Raahe, 91/2016/1, [hereinafter Hanhikivi-1 Environmental Decision 2016].
[178] Pohjois-Suomen Aluehallintovirasto, Hanhikiven ydinvoimalaitoksen sataman ja jäähdytysveden ottorakenteiden rakentaminen sekä meriväylän kaivaminen ja valmistelulupahakemus, Pyhäjoki, 54/2016/2.
[179] Ydinenergialaki 990/1987, 6§.
[180] Hanhikivi-1 Environmental Decision 2016, 86.
[181] *Ibid*, 86, Luonnonsuojelulaki 1096/1996 29§.
[182] Hanhikivi-1 Environmental Decision 2016, 192-207.
[183] *Ibid*, 195.
[184] *Ibid*.
[185] *Ibid*, 195-196.
[186] Hanhikiven ydinvoimalaitoksen jäähdytysveden purkurakenteet, Ydinvoimalaitoksen ja sen varaenergiatuotannon ympäristö-lupahakemuksen täydennys, 9.9.2015.
[187] Hanhikivi-1 Environmental Decision 2016, 196.
[188] *Ibid*.
[189] *Ibid*.
[190] *Ibid*.

a chimney that is at least 30 meters in height.[191] These exhausts make reference to a number of difference laws that are especially to be taken into consideration.[192]

Noise levels for Hanhikivi-1 need to be a standard 45dB both during the day (7-22) and at night (22-7).[193] Any steam outbursts should be timed to happen between 8 and 20.[194] Noise levels are to be continuously monitored.

Waste management requirements are quite similar in the Hanhikivi-1 project as they were in Loviisa and Olkiluoto. Waste ought to be properly sorted and cannot be mixed with each other, taking into special consideration the hazardous and toxic waste.[195] It is regulated as well who the waste can be handed over to.[196] The waste has to be kept in such a way that there will not be any smell impacts for the area due to waste storage.[197]

Storage of chemicals and other dangerous substances has to be done in an appropriate way for each chemical and the possible reactions from that specific chemical.[198] It needs to be ensured that chemicals that can have dangerous reactions when coming into contact are not stored together in the same vicinity.[199] It is also essential that there is no opportunity for the chemicals to seep into the ground water and cause poisoning of the soil.[200]

Fennovoima has to make a probabilistic risk assessment on what risks are present in relation to the environment, and how these are being monitored in order to ensure that these do not take place or even if they do how to mitigate any damages.[201]

Before the NPP is decommissioned such action is to be communicated to the authority at least a year prior. This has to include a plan how the decommissioning process will be done and what it shall include.[202]

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[191] *Ibid*.
[192] Valtioneuvoston asetus polttoaineteholtaan alle 50 megawatin energiantuotantoyksiköiden ympäristönsuojeluvaatimuksista (750/2013); Valtioneuvoston asetus suurten polttolaitosten päästöjen rajoittamisesta 936/2014.
[193] Hanhikivi-1 Environmental Decision 2016, 198.
[194] *Ibid*.
[195] *Ibid*, 198-199.
[196] Jätelaki 646/2011, ch. 3.
[197] Hanhikivi-1 Environmental Decision 2016, 199.
[198] *Ibid*.
[199] *Ibid*.
[200] *Ibid*.
[201] *Ibid*, 200-201.
[202] *Ibid*.

There are a number of different reporting and observation procedures that have to take place. These are in relation to the environment, emissions, construction processes and even observation of the amount of fish around.[203] Fennovoima is obligated to pay 3000 EUR annually (on construction years) to compensate for fish, in addition to planting a total of 117 000 sea trout and whitefish.[204] Additionally, within three years Fennovoima has to contact the local authority to see if there has been any more damage to the fisheries that they have to compensate – if no agreement has been made in relation, Fennovoima will have to set a deposit of 100 000 EUR that can then be used to cover these expenses.[205]

3.4. Neste Naantali

Neste Oyj (Neste) is a Finnish company specializing in oil refining and marketing of oil related products.[206] Neste has operations in 14 different countries and is the world's largest producer of renewable diesel energy.[207] Neste has a number of different project sites in Finland as well as around the world. We will be taking a closer look at the environmental decision that was done in regards to the oil refinery located in Naantali, Finland. This was decided by Southern Finland's Regional State Administrative Agency with decision number 35/2018/1.[208] The Naantali oil refinery is located in Viheriäisten niemi which is on the territory of both Naantali and Raisio.[209] The refinery is located close to eight public schools/nurseries/health centers in addition to two protected nature reserves.[210] The refinery has been set under a total of 69

[203] *Ibid*, 203-206.
[204] *Ibid*, 205-206.
[205] *Ibid*, 206.
[206] Neste Oyj, https://www.neste.com/fi/konserni/tietoa-meista, accessed 11.4.2020.
[207] Neste Oyj, https://www.neste.com/releases-and-news/renewable-solutions/neste-70-years-finnish-oil-refiner-worlds-largest-producer-renewable-diesel, accessed 11.4.2020.
[208] Etelä-Suomen Aluehallintovirasto, Öljynjalostamon ympäristöluvan lupamääräysten tarkistaminen päätelmien vuoksi, Naantali, 35/2018/1, [hereinafter Neste Environmental Decision 2018].
[209] Neste Environmental Decision 2018, 4.
[210] *Ibid*, 7.

requirements.[211] The initial environmental decision for the refinery[212] was amended with the one we are handling here with adding 11, amending 11 and deleting 15 requirements.[213] We chose to look at the revision for the decision as this is newer and more up to date with current legislation.

The emissions that come from the refinery have a long list of requirements to adhere to, these are detailed with e.g. how much sulfur can be released into the air, how hydrogen and nitrogen need to be handled as emissions and so forth.[214] Emission restrictions have been set until the end of 2023 and Neste will have to send the authority a proposal of the new restrictions starting from the beginning of 2024 by August 2022, so in good time before the already set restrictions expire.[215] This timeline does however not apply to fuel and diesel emissions[216], as they have a restriction set only until 31.10.2018[217], i.e. at the time of this thesis these would already have to have been updated.

Any sewage water that goes back into the ocean, along with water emissions should at all times be kept at an absolute minimum.[218] All sewage water has to be mechanically, chemically and biologically processed.[219] Only a certain amount of water ought to be released in to the ocean annually keeping in mind that the average temperature of the nearby water front ought to not exceed +28 °C.[220]

When it comes to noise levels they are not allowed to exceed 55dB during the day (7-22) and 50dB at night time (22-7).[221] Even any construction works or necessary repairs that need to be done are ought to be done in such a way that the noise levels are not exceeded.[222]

Similarly to the nuclear facilities, the waste levels at this oil refinery should also be kept at an absolute minimum and the waste that does accumulate should be recycled as much as

[211] *Ibid*, 91-108.
[212] Länsi-Suomen ympäristolupavirasto, Neste Oil Oyj:n Naantalin öljynjalostamon ympäristölupahakemus, 45/2007/2.
[213] Neste Environmental Decision 2018, 91.
[214] *Ibid*, 91-94.
[215] *Ibid*, 93.
[216] Directive 94/63/EC Directive on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations.
[217] Neste Environmental Decision 2018, 94.
[218] *Ibid*.
[219] *Ibid*.
[220] *Ibid*, 95.
[221] *Ibid*, 96.
[222] *Ibid*.

possible.[223] Such waste needs to be stored according to legislation and only given to parties that have been qualified by the local authority to handle possibly toxic waste.[224] As there is a harbor in connection to the refinery some waste can be taken on to the mainland from the ships that dock at this harbor.[225] All of the waste and other chemicals needed for the functioning of the refinery are to be stored appropriately and in a safe manner.[226]

Risk assessment and mitigation is extremely important and has to be reported and planned.[227] A whole 31 of the set requirements are on reporting and observations of the effects the refinery has and how these are handled and mitigated.[228] Accounting and reporting needs to be up to date at all times.[229] This also includes the payment annually of 3100 EUR for the harm to fish.[230]

3.5. Fortum Meri-Pori

The Meri-Pori power plant is also owned by Fortum[231] in conjunction with TVO.[232] It is a coal-fired power plant which is one of the most effective and cleanest of its kind in the world.[233] The power plant is used to produce electricity for Finland. It is located in the industrial area of Tahkoluoto, Pori, and has been commissioned in 1994.[234] The environmental decision was decided by Western Finland's Environmental License Bureau with number 23/2005/2.[235] This

[223] *Ibid*.
[224] Council Regulation (EEC) No 259/93 of 1 February 1993 on the supervision and control of shipments of waste within, into and out of the European Community.
[225] Neste Environmental Decision 2018, 97.
[226] *Ibid*.
[227] Asetus vaarallisten kemikaalien teollisesta käsittelystä ja varastoinnista 59/1999.
[228] Neste Environmental Decision 2018, 99-106.
[229] *Ibid*.
[230] *Ibid*, 108.
[231] See Ch. 3.1.
[232] See Ch. 3.2.
[233] Fortum, https://www.fortum.com/about-us/our-company/our-energy-production/our-power-plants/meri-pori-power-plant, accessed 11.4.2020.
[234] Fortum, https://www.fortum.fi/tietoa-meista/yhtiomme/energiantuotantomme/voimalaitoksemme/meri-porin-lauhdevoimalaitos, accessed 11.4.2020.
[235] Länsi-Suomen ympäristölupavirasto, Fortum Power and Heat Oy:n ympäristösuojelulain mukainen ympäristölupahakemus, joka koskee Porin kaupungissa sijaitsevan Meri-Porin voimalaitoksen toimintaa, 23/2005/2, [hereinafter Meri-Pori Environmental Decision 2005].

industrial complex in addition to Meri-Pori has another power plant and a junk processing center.[236] The power plant is very close to just open ocean, with only a couple of islands in the near vicinity.[237] There are two Natura 2000 protected island groups close by, as well as three other islands that are nature preserved.[238] The decision was set under 38 requirements.[239]

As the power plant is coal-fired it has strict requirements when it comes to emissions that are let into the environment. The chimneys in the factory have to be at least 83 to 150 meters high depending on where in the plant the emission are coming from.[240] The oxygen saturation and hydrogen emissions have set levels when in the released particles.[241]

No waste can be sent for burning if it can be recycled and reused in any way.[242] However, even some waste that comes from the power plant it is completely forbidden to be burnt but has to be disposed of by delivery to an appropriate facility.[243] This waste may also contain ammonia which results in a lot of types of waste having to be delivered to facilities for processing.[244]

Noise levels are not allowed to exceed 45dB at any time of the day (24/7) but what is notable is that these noise levels need to be taken into consideration as a combined level of noise from all the plants that are located in the same 'block' of the industrial complex.[245] This also includes noise coming from vibrations.

For certain system failures the plant can still remain in operation for a set number of hours without a specific part functioning, but this has to be done in a way that it does not have any major risks related if doing so.[246] These needs to be reported to the appropriate ELY Centre within 48 hours of such situations becoming apparent.[247] In general any and all activities of the power plant have to be strictly monitored and reported.[248] Annually Fortum is also liable to provide an annual report to the local authority which illustrates the produced electricity, related

[236] Meri-Pori Environmental Decision 2005, 4.
[237] *Ibid*, 5.
[238] *Ibid*, 9-10.
[239] *Ibid*, 57-66.
[240] *Ibid*, 57.
[241] *Ibid*, 58.
[242] *Ibid*, 59.
[243] Jätelaki 646/2011, 6§.
[244] Meri-Pori Environmental Decision 2005, 59.
[245] *Ibid*, 60.
[246] *Ibid*, 61.
[247] *Ibid*.
[248] *Ibid*, 61-64.

emissions, all the measurements taken while commissioning, waste management and a usage diary.[249]

Once the decision is made to decommission the power plant a notice has to be sent to the local authority at least six months before the decommissioning date with plans of how protection of nature, water, soil and waste management shall be handled during this process.[250]

3.6. Seinäjoen Energia

Seinäjoen Energia Oy (Seinäjoen Energia) is a Finnish power company that is completely owned by the city of Seinäjoki.[251] They provide their customers with electricity, heat and water maintenance.[252] We will be having a closer look at a power plant providing district heating in Hanneksenrinne which is located in Seinäjoki. The decision was given by the Western and Central Finland's Regional State Administrative Agency with number 233/2013/1.[253] The power plant is located very centrally in Seinäjoki and is only 100 meters away from the Seinäjoki Central hospital and 250 meters from the nearest residential area.[254] There are no protected nature areas close by. This decision is subject to 39 requirements.[255]

The types of fuel that can be used are set out in the requirements – biofuel from specified wood related sources.[256] Crude oil can be burned only to power up the generator at the neighboring hospital.[257] In this power plant the chimney for emissions and smoke release have to be between

[249] *Ibid*, 64-65.
[250] *Ibid*, 66.
[251] Seinäjoen energia, https://seinajoenenergia.fi/tietoa-meista/tietoa-meista/, accessed 12.4.2020.
[252] *Ibid*.
[253] Länsi- ja Sisä Suomi Aluehallintovirasto, Seinäjoen Energia Oy:n Hanneksenrinteen lämpökeskuksen ympäristöluvan muuttaminen, lupamääräysten tarkistaminen ja toiminnan aloittaminen muutoksenhausta huolimatta, Seinäjoki, 233/2013/1, [hereinafter Seinäjoen Energia Environmental Decision 2013].
[254] Seinäjoen Energia Environmental Decision 2013, 2.
[255] *Ibid*, 33-39.
[256] *Ibid*, 33.
[257] *Ibid*.

52 and 58 meters high.[258] Some of the units are limited to 1500 usage hours per year.[259] Here again, if the usage is for the hospitals generator this can be altered exceptionally.[260]

Noise levels need to be kept under 55dB during the day (7-22) and 50dB at night (22-7).[261] These levels have to be modeled within 12 months of the operations starting. The plan of taking these noise measurements and the resulting report have to be submitted to the Ostrobothnia ELY Centre.[262]

Sewage water is not set under a vast number of particular regulations but it is said that Fortum must follow the instructions that has been given to them by water maintenance companies with regards to what can be let into the sewers.[263] Water that has been in contact with oil has to be processed according to the SFS-EN-58-1 standard.[264]

Waste is to be recycled and only handed over to registered individuals to ensure appropriate disposal.[265] Dangerous and toxic waste has to be locked and stored in watertight containers making sure that oil waste is kept separate from all other waste.[266] Before taking anything to the landfill the suitability of the landfill has to be evaluated.[267] Storage of any chemicals has to also be done in airtight containers which are kept at a distance from each other.[268]

Fortum has to use the 'best available technology', i.e. BAT, throughout the lifecycle of the power plant.[269] If technology evolves the power plant has to also be up to date. Monitoring of all aspects of the power plant has to be done including, but not limited to, any risks and exceptional circumstances[270] any soil spoilage[271], oxygen and hydrogen levels including samplings[272], particle amounts and emissions.[273] Most of these reports need to be delivered to the Ostrobothnia ELY Centre and Seinäjoki environmental center.

[258] *Ibid*, 34.
[259] *Ibid*.
[260] *Ibid*.
[261] *Ibid*, 35.
[262] *Ibid*.
[263] *Ibid*.
[264] *Ibid*.
[265] Jätelaki 646/2011, 143§.
[266] Seinäjoen Energia Environmental Decision 2013, 35-36.
[267] *Ibid*. 36.
[268] *Ibid*.
[269] *Ibid*, 37.
[270] *Ibid*.
[271] *Ibid*, 38.
[272] *Ibid*.
[273] *Ibid*, 39.

If there are changes to the operations of the power plant that significantly alter the purpose of operations, or if it is chosen to be completely decommissioned these need to be informed the ELY Centre as soon as practicable.[274]

3.7. Pori Energia

Pori Energia Oy (Pori Energia) is a Finnish energy company that provides electricity and district heating to mostly consumers in their region.[275] They are located in Pori, as the company name would suggest.[276] We shall be considering the decision in relation to the Aittaluoto power plant which is within the city of Pori. This decision was decided by Southern Finland's Regional State Administrative Agency with decision number 99/2018/1.[277] Aittaluoto is located within an industrial complex which has other functional factories as well.[278] There are no protected areas in the vicinity of the power plant.[279] The decision is set under 56 requirements.[280]

Firstly a general requirement has been given that the power plant has to have a named responsible person who is in charge of commissioning, operation, maintenance and decommissioning.[281] The type of fuel that can be used at the power plant has been limited, and in case energy is produced through burning of waste it needs to be kept in mind that PVC plastic cannot be within such burnable waste.[282]

The storage and processing of fuel and waste at the power plant has to be done in such a way that it does not result in noise, dust or smell impacts to the area.[283] Where these substances are

[274] *Ibid*. 41.
[275] Pori Energia, https://www.porienergia.fi/yritys#.XpVe4ogzZPY, accessed 14.4.2020.
[276] *Ibid*.
[277] Etelä-Suomen Aluehallintovirasto, Aittaluodon voimalaitoksen ympäristöluvan tarkistaminen, Pori, 99/2018/1 [hereinafter Pori Energia Environmental Decision 2018].
[278] Pori Energia Environmental Decision 2018, 3.
[279] *Ibid*, 4.
[280] *Ibid*, 36-56.
[281] *Ibid*, 36.
[282] *Ibid*, 36-37.
[283] *Ibid*, 37.

unloaded from trucks etc. have to be such that even if there was a spill the chemicals would not be able to seep into the ground waters or soil.[284] In other words – such materials have to be unloaded in inside areas.[285] Any emissions coming from the storage or burning of these substances has to be done in such a way that emission levels are kept to an absolute minimum.[286] These emission levels for such activities are extremely strict and cannot be exceeded.[287] The emission levels are reevaluated in certain intervals to keep them up to date with the current climate.[288]

Coolant and processing waters may be streamed into the nearby river, but they have to at first be neutralized and stripped of any salts or oils that may be present.[289] Filtering is a key part of water processing as it ensures that no particles that do not belong in the natural waters will not be streamed there by Pori Energia. Samples will be taken from the filters to monitor what is present in the water before release.[290]

Waste has to be sorted into types of waste and waste numbers as per legislation.[291] Different waste types need to be kept and stored away from each, with special emphasis on the storage of chemicals or dangerous waste.[292]

Noise levels are to be kept below 55dB during the day (7-22) and 50dB at night (22-7).[293] If the noise is seen as being narrowband noise or strike like 5dB will be added to the measured noise level when determining if the noise levels are within the allowed parameters.[294]

In case any abnormal activity or risks are detected these need to be mitigated to the greatest extent possible as soon as they become apparent.[295] Pori Energia has to have in place a risk management plan that shows the measures planned to be taken with regards to possible risks.[296] As risks are unavoidable, the power plant is also subject to monitoring requirements – a monitoring plan needs to be in place that has also been approved by Southern Finland's ELY

[284] *Ibid*, 38.
[285] *Ibid*, 39.
[286] *Ibid*, 40.
[287] *Ibid*, 41.
[288] *Ibid*, 42.
[289] *Ibid*, 44.
[290] *Ibid*.
[291] Valtioneuvoston asetus jätteistä 179/2012, 4§.
[292] Pori Energia Environmental Decision 2018, 45.
[293] *Ibid*, 46.
[294] *Ibid*.
[295] *Ibid*.
[296] *Ibid*, 48.

Centre.[297] As the power plant is such in nature that emissions to the air are always present, these are especially monitored to ensure that none of the boilers are letting out more emissions than they should be.[298] Boiler safety is a top priority and every different boiler has their own specific requirements.[299] Noise levels of these boilers are also part of the monitoring scope.[300]

All monitoring and maintenance activities have to be appropriately logged in order to ensure transparency.[301] If any new boilers are taken into use this has to be informed to Southwest Finland's ELY Centre at least one month prior to commissioning.[302] They will also need to be informed if the scope of activities at the power plant are planned to be significantly altered, or if the power plant is planned on being decommissioned in its entirety.[303]

3.8. Biovakka Suomi Oy

Biovakka Suomi Oy (Biovakka) is part of the larger corporation of Gasum, which is one of the leading energy companies in the Nordic countries on gas and energy with the aim of a carbon neutral future.[304] They produce energy using biogas methods.[305] The decision considered here has been decided by Southern Finland's Regional State Administrative Agency with decision number 222/2015/1.[306] It is in relation to a biogas facility that is located in Topinoja, in Turku, on the premises of a waste processing facility.[307] In particular with this decision was decided if the use of the facility can be enlarged from processing 75 000 tons of silt per annum to 100 000

[297] *Ibid*.
[298] *Ibid*, 49-52.
[299] *Ibid*.
[300] *Ibid*.
[301] *Ibid*, 54.
[302] *Ibid*, 55.
[303] *Ibid*, 56.
[304] Gasum, https://www.gasum.com/gasum-yrityksena/organisaatio/gasum-lyhyesti/, accessed 15.4.2020.
[305] *Ibid*.
[306] Etelä-Suomen Aluehallintovirasto, Topinojan biokaasulaitoksen toiminnan muutos, Turku, 222/2015/1, [hereinafter Biovakka Environmental Decision 2015].
[307] Biovakka Environmental Decision 2015, 2.

tons per annum in addition to 50 000 tons of other industrial waste.[308] There are no nature reserve areas in close vicinity to the facility.[309] This decision was set under 35 requirements.[310]

The biogas facility functions and produces energy by processing waste that they receive at the facility. Biovakka is responsible for knowing the quality of all waste and side product as well as knowing if they qualify to the process used for processing biogas.[311] The facility is not allowed to take in any waste that is considered as being dangerous.[312] Biovakka has to nominate a responsible person for the entire facility who is responsible for the maintenance, use, commissioning, decommissioning and reporting of the facility.[313] The contact details for this responsible person need to be provided to Southwest Finland's ELY Centre and the Environmental delegate of the city of Turku.[314]

All activities are to be embarked on in such a way that they do not cause unnecessary smell impacts for the surrounding areas, no odor rich substances or materials are allowed to be stored outside.[315] The incoming material has to be taken in, in such a way that it can be transferred straight into the storage tanks and no odors are to be released into the outside air.[316] The waste needs to be processed as soon as possible after its arrival to the facility.[317] The space has to have such a type of low pressure that all odor rich emissions can be collected, processed and cleaned before release outside.[318] Biogas facilities have to be equipped with capabilities to burn up the biogas that for some reason cannot be processed into energy due to e.g. a system failure.[319]

The floor in the facility has to be watertight, in addition to the outside area also being coated in order to prevent anything seeping into the ground.[320] All drainage water needs to be collected.[321] Sewage water on the other hand has to be processed and cleaned so that the nutrients in the water can be utilized as fertilizer.[322]

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[308] *Ibid*, 5.
[309] *Ibid*, 4.
[310] *Ibid*, 36-44.
[311] *Ibid*, 36.
[312] *Ibid*.
[313] *Ibid*, 37.
[314] *Ibid*.
[315] *Ibid*.
[316] *Ibid*.
[317] *Ibid*.
[318] *Ibid*, 37-38.
[319] *Ibid*, 38.
[320] *Ibid*.
[321] *Ibid*.
[322] *Ibid*, 39.

Noise levels are to be kept below 55dB during the day (7-22) and 50dB at night (22-7), measured from the yard of the nearest residential building.[323] If levels are exceeding, immediate action has to be taken by Biovakka.

It is important to always use the best available technology and the facility operator will have to ensure that they are keeping their systems up to date.[324] In case of any systems failures, these need to be firstly tried to bring to an end, but if smell, noise or other impacts are detected these need to be reported to the Southwest Finland's ELY Centre and the Environmental delegate of the city of Turku.[325] A preventive plan for such incidents has to be in place at all times.[326] If the system failure lasts for more than three days, any silt that is already at the facility can be stabilized with lime (i.e. calcium oxide).[327]

An essential requirement grouping to this decision is that of monitoring and reporting. All process circumstances, temperatures, cracks, fractures, samplings, odors etc. have to be monitored regularly with traceable reporting.[328] Measurements, samplings and analysis has to be done through a third party under standardized procedures.[329] An annual report has to be produced.[330]

The Southwest Finland's ELY Centre will need to be informed if the scope of activities at the facility are planned to be significantly altered, or if the power plant is planned on being decommissioned in its entirety.[331]

[323] *Ibid*, 40.
[324] *Ibid*.
[325] *Ibid*, 40-41.
[326] *Ibid*, 41.
[327] *Ibid*, 41.
[328] *Ibid*, 41-42.
[329] *Ibid*, 42.
[330] *Ibid*, 43.
[331] *Ibid*, 44.

3.9. Lemminkäinen Infra Oy

Lemminkäinen Infra Oy (Lemminkäinen) is a Finnish company specialized in construction which has, since the decision considered here, become part of YIT Oyj (YIT).[332] YIT is also a Finnish company with its specialization in construction of infrastructure, in addition to real estate investments, business premises and living quarters.[333] The decision considered here has been decided by Western and Central Finland's Regional State Administrative Agency with decision number 187/2013/1.[334] The core activity is rather different in this environmental decision than in those that we have considered in chapters 3.1-3.8. as this decision is in relation to the activity of mining and crushing stone aggregate, in addition to the receiving and processing of recycled asphalt.[335] Such activities are conducted in the Antimoni premises in the town of Alanurmo which is located in Seinäjoki.[336] There are no nature reserve areas in close vicinity to the facility.[337] The decision is set under 36 requirements.[338]

Firstly, due to the nature of the activities the commencement of these has to have been limited in time: mining, crushing, drilling and fracking can be done Monday to Friday between 6 and 22; and explosions are limited to Monday to Friday between 8 and 18.[339] The asphalt facility can be operational Monday to Friday between 5 and 22.[340] In addition to this, 40 days out of the year it may be operational 24 hours a day – such operation has to be informed to the South Ostrobothnia ELY Centre and the environment authority of the city of Seinäjoki.[341] The receiving, transport and loading of materials related to the operations have to be done Monday

[332] Verohallinto, https://www.vero.fi/syventavat-vero-ohjeet/ohje-hakusivu/71824/yit-oyjn-ja-lemminkainen-oyjn-sulautuminen/, accessed 17.4.2020.
[333] YIT Oyj, https://www.yit.fi/, accessed 17.4.2020.
[334] Länsi- ja Sisä-Suomen Aluehallintovirasto, Kallion louhintaa ja murskausta sekä asfalttiasemaa koskeva ympäristölupa sekä jätteen hyödyntämistä koskevan ympäristöluvan tarkistaminen ja muutos, Seinäjoki, 187/2013/1, [hereinafter Lemminkäinen Environmental Decision 2013].
[335] Lemminkäinen Environmental Decision, 2013, 1.
[336] *Ibid*.
[337] *Ibid*, 2-3.
[338] *Ibid*, 16-23.
[339] *Ibid*, 16.
[340] *Ibid*, 17.
[341] *Ibid.*

to Saturday between 5 and 22.[342] Here also, 40 days in a year these activities can be conducted at night time.[343]

The premises is allowed to receive a maximum of 40 000 tons of clean surplus mass from outside their own premises and between 15 000 and 30 000 tons of waste asphalt per annum.[344] 260 000 tons of stone aggregate can be crushed annually.[345] The asphalt station may produce different asphalt types in an amount that is between 130 000 and 230 000 tons annually.[346]

The facility can utilize, store and receive land waste that is imperishable, as well as store up to 40 000 tons of such waste for three years before utilization.[347] All land waste taken in has to come with a waybill from which it is apparent where the soil came from and how much of it was delivered.[348] A landscaping plan has to be made and once such works are done this needs to be informed to the Southern Ostrobothnia ELY Centre and the environment authority of the city of Seinäjoki.[349]

Anything that causes noise has to be using the best available technology and be located in such places that the noise impact is as low as possible.[350] Noise levels are to be kept below 55dB during the day (7-22) and 50dB at night (22-7), measured from the yard of the nearest residential building.[351] If the noise is seen as being narrowband noise or strike like 5dB will be added to the measured noise level when determining if the noise levels are within the allowed parameters.[352]

All activities conducted should be done in a way that minimizes the emissions to the air. Especially dust is to be considered at a project site such as this one – sources of dust should be located as low as possible into the ground and there should be dust collectors attached to the machines.[353] Best available technology is important here again.[354]

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[342] *Ibid*.
[343] *Ibid*.
[344] *Ibid*.
[345] *Ibid*.
[346] *Ibid*.
[347] *Ibid*.
[348] *Ibid*.
[349] *Ibid*, 18.
[350] *Ibid*.
[351] *Ibid*.
[352] *Ibid*.
[353] *Ibid*.
[354] *Ibid*, 19.

Groundwater and the soil have to be protected at all times and nothing is allowed to seep into them from the site.[355] All chemicals and toxic substances are to be stored in suitable containers and any fueling or loading of such substances has to be done on a coated surface which is waterproof.[356] Sewage is to be collected into tanks and then taken to facilities that are licensed to process it.[357] Such practices apply to produced waste as well.[358] Any mining waste is subject to specific legislation and the plan that has to have been submitted to the Southern Ostrobothnia ELY Centre.[359]

Lemminkäinen is responsible to nominate a responsible person for the activities of mining, crushing, asphalt production, waste usage and storage as well as management of the project site as a whole.[360] Such a person has to be identified to the Southern Ostrobothnia ELY Centre and the environment authority of the city of Seinäjoki.[361] He or she will also be in charge of ensuring that all activities are being monitored and reported according to best practices. Air quality, water quality, emissions, ground water, waste and basically all activities are to be monitored and such results entered into a logbook.[362] An annual report of the activities and report results has to be made each year.[363]

The Southern Ostrobothnia ELY Centre will need to be informed if the scope of activities at the facility are planned to be significantly altered, or if the facility is planned on being decommissioned in its entirety.[364] In addition, Lemminkäinen has to pay a 20 000 EUR deposit to the ELY Centre for the purpose of ensuring appropriate monitoring, waste management and decommissioning.[365]

[355] *Ibid*.
[356] *Ibid*.
[357] *Ibid*.
[358] *Ibid*, 19-20.
[359] Valtioneuvoston asetus kaivannaisjätteistä 379/2008.
[360] *Ibid*, 20.
[361] *Ibid*.
[362] *Ibid*, 22-23.
[363] *Ibid*, 23.
[364] *Ibid*.
[365] *Ibid*.

3.10. Stora Enso Oyj

Stora Enso Oyj (Stora Enso) is a Finnish-Swedish company conducting its activities in the field of lumber industry.[366] Stora Enso is a global provider of renewable solutions in paper, packaging, wooden construction and biomaterials.[367] The decision we are considering here was decided by Southern Finland's Regional State Administrative Agency with decision number 258/2013/1.[368] The 'Fluting Factory'[369] is an integrated pulp mill and cardboard factory which produces semi-chemical fluting, which is containerboard for the use of the cardboard industry.[370] It also includes the power plant, sewage and surface water processing facilities that are located in the same area.[371] The Fluting Factory is located in Rautsalo industrial area in the city of Heinola.[372] It is in the vicinity of one Natura 2000 protected area and four other protected nature areas.[373] The decision is set under 40 different requirements.[374]

Sewage water is to be collected and processed so that only clean enough water is let back into the natural water streams.[375] The capacity of the processing machines should always be as high as possible.[376] All other water, including rain water, has to be collected and redirected in a way that it does not cause harm to the environment.[377]

[366] Stora Enso Oyj, https://www.storaenso.com/-/media/documents/download-center/documents/annual-reports/2019/storaenso_summary_2019_eng.pdf, accessed 19.4.2020.
[367] *Ibid*.
[368] Etelä-Suomen Aluehallintovirasto, Ympäristösuojelulain mukainen hakemus, joka koskee Stora Enso Oyj Heinolan Flutingtehtaan ympäristölupapäätöksen lupamääräysten tarkistamista, Heinola, 258/2013/1, [hereinafter Stora Enso Environmental Decision 2013].
[369] The subject of this decision – Flutingtehdas In Heinola.
[370] Stora Enso Oyj, https://www.storaenso.com/fi-fi/about-stora-enso/stora-enso-locations/heinola-fluting-mill, accessed 19.4.2020.
[371] Stora Enso Environmental Decision 2013, 1.
[372] *Ibid*.
[373] *Ibid*, 3.
[374] *Ibid*, 64-73.
[375] *Ibid*, 64-65.
[376] *Ibid*, 65.
[377] *Ibid*, 66.

Emission levels are set by legislation[378] and they have to be under constant monitoring.[379] The emission levels can be seen as adhering to legislation if the average of each calendar month does not exceed the set levels.[380] The machines used for taking the measurements have to be compliant to the SFS-EN 14181 standard.[381] The boilers are under specific scrutiny to their emissions at all times.[382] Depending on the type of the boiler, the restrictions and limitation are different.[383] The emissions of the pulp mill have to have been reported to the Tavastia Proper ELY Centre.[384]

Noise levels are to be kept below 55dB during the day (7-22) and 50dB at night (22-7).[385] If the noise is seen as being narrowband noise or strike like 5dB will be added to the measured noise level when determining if the noise levels are within the allowed parameters.[386] These noise levels have to be constantly monitored and every three years a further mapping of noise levels has to be done.[387] Any new machinery taken into use or altering of processes have to take into consideration the fact that the noise coming from them has to "fit into" the allowed levels.[388]

The initial aim ought to be that each process produces as little waste as possible and the waste that does occur should be sorted and recycled as far as possible.[389] No negative impacts should come from the waste and they need to be stored in appropriate facilities, taking extra consideration for toxic waste.[390] Loading and docking areas have to be built in a way that they prevent any spillage from seeping into the soil or ground water.[391]

If any malfunctions or risks are noticed they have to be mitigated immediately – if despite these mitigations action the allowed levels of e.g. emissions will be exceeded, Stora Enso has to immediately notify the Tavastia Proper ELY Centre and the environment authority of the city Heinola.[392] For occurrences of spillage, the fluting factory has to at all times have enough

[378] Valtioneuvoston asetus polttoaineteholtaan vähintään 50 megawatin polttolaitosten päästöjen rajoittamisesta 96/2013.
[379] Stora Enso Environmental Decision 2013, 66.
[380] *Ibid*.
[381] *Ibid*, 67.
[382] *Ibid*.
[383] *Ibid*, 68.
[384] *Ibid*.
[385] *Ibid*, 69.
[386] *Ibid*.
[387] *Ibid*.
[388] *Ibid*.
[389] *Ibid*, 70.
[390] *Ibid*.
[391] *Ibid*.
[392] *Ibid*, 71.

soaking material present.[393] The risk mitigation plan has to be regularly updated and if any changes are made to it the ELY Centre has to be informed.[394] The factory should have a constant plan to improve energy efficiency.[395]

All of the actions conducted within the premises have to be monitored closely and report made so that all activities are easy to trace and transparent.[396] An annual report needs to be produced for distribution to the Tavastia Proper ELY Centre and the environment authority of the city Heinola each year.[397]

Stora Enso has to pay 4 160 EUR to the ELY Centre to compensate for the damages caused to fisheries each year.[398] The Tavastia Proper ELY Centre will need to be informed if the scope of activities at the facility are planned to be significantly altered, or if the facility is planned on being decommissioned in its entirety.[399]

[393] *Ibid*.
[394] *Ibid*.
[395] *Ibid*, 72.
[396] *Ibid*.
[397] *Ibid*, 73.
[398] *Ibid*.
[399] *Ibid*.

4. Re-occurring Requirements

Now that ten different environmental decision have briefly been overviewed it should be evident to the reader that some of the requirements occurred if not in all, but at least in most, of the decisions. They were not identical in any case as each project is always an independent ensemble due to the various project sites, activities and purposes. Still, there are groups of requirements that were considered in all: noise, waste, water areas, emissions and monitoring and reporting. Common occurrences were also made by requirements in relation to the animal kingdom (mostly fish) and storage of various materials. From each decision it is evident which ELY Centre has to be kept informed at all times throughout the life span of the project. The remaining portion of this thesis will now compare more substantially the given requirements with each other and discuss on whether it seems that some companies were "let off easy" and whether there are requirements that are possibly too harsh given the scope of an industrial company and what should be considered as being reasonable to ask them to do.

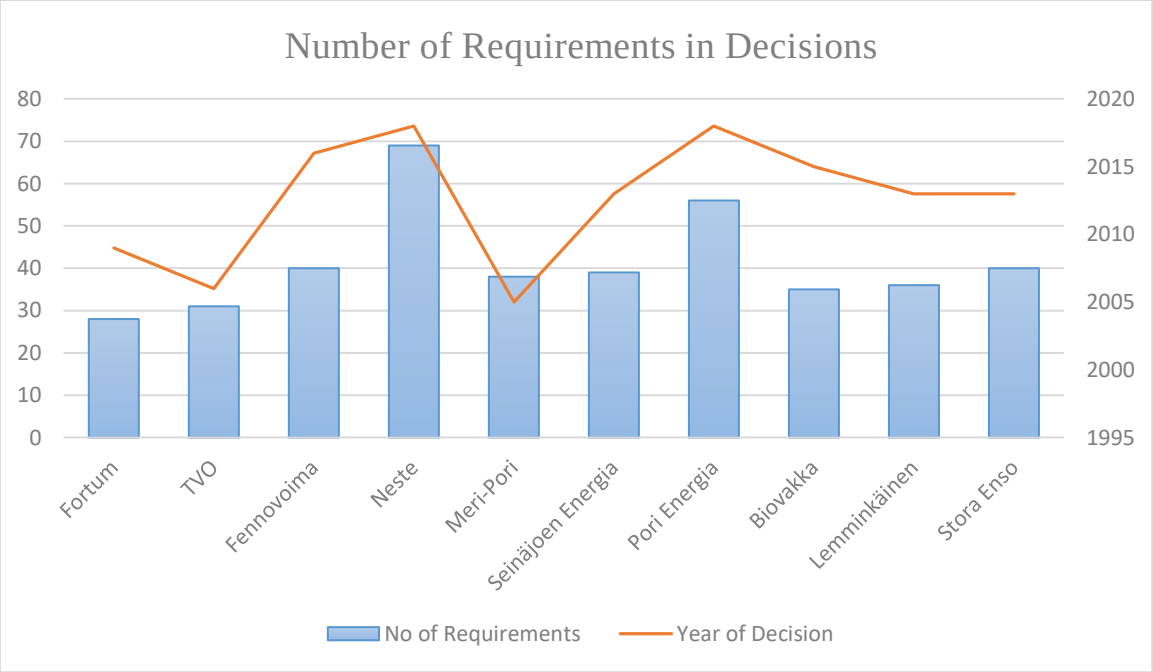

Table 1. Number of set requirements in the environmental decisions assessed

4.1. Noise

We can start off with probably the simplest group of requirements that occurred in all ten of the environmental decisions – that is the relation to noise impact coming from the project sites and facilities within. In each decision there was always a set amount of decibels that were the maximum range of noise, depending on whether or not it was day time (7-22) or night time (22-7). The maximum decibels were however not the same for every decision, although no drastic differences could be seen.

The maximum given decibels in the decisions ranged from 40 dB to 55dB. Firstly, it can be noticed that the project sites of nuclear power plants were allowed the least amount of noise levels.[400] It is not entirely clear if there is a connection to the type of project that is operated or whether it may genuinely be a case of coincidence. Then again Fennovoima's Hanhikivi-1 had slightly different requirements from Fortum and TVO so it is not in direct correlation in any case. Moreover, out of the ten decisions in eight there was differentiation made between night time noise and day time noise. This was not the case in decisions in relation to Fennovoima Hanhikivi-1 and Fortum Meri-Pori as in both of these situations the maximum level of 45dB was applicable at all times. In addition to these, a couple of the noise requirements added an additional 5dB to the measurements if the noise was narrowband or strike like in nature.[401] When the authorities consider environmental impacts they usually use as an aid comparisons of what kind of requirements similar projects have had[402] and therefore it is rather critical if there are certain requirements that are vastly different from the "usual" without proper justifications.

However, it should be noted that the differences in the noise levels does not seem to be very big and therefore without having the technical expertise in the industrial field the requirements in all ten decisions follow roughly the same train of thought. A good illustrative note that could

[400] See Fortum Loviisa, TVO Olkiluoto and Fennovoima Hanhikivi-1.
[401] See Pori Energia, Lemminkäinen Infra Oy and Stora Enso Oyj.
[402] Mauno Kosonen, Tapio S Linna, *Ympäristövaikutusten arviointi (Helsingin yliopiston maantieteen laitos*, 1996) 49.

be pointed here is that a normal conversation is usually 60 dB[403], meaning that the noise impacts coming from any of the industrial sites truly cannot be very loud which is understandable considering that some of these project sites have been very close to residential areas.

Noise levels should always be assessed during these assessment periods[404] but they do not seem to be the key subjects in these decisions. The requirements are always present, but they are just brief mentions when compared to some other aspects that the authorities have set requirements on. Subsequently, we shall have a closer look into noise impacts as they do still seem to have some discrepancies in the decisions.

4.2. Waste Management

The question of how to manage waste that the site produces was also a common denominator in all ten of the viewed decisions. These were multiple and at times rather lengthy requirements as to how waste that the site produces should be handled, stored and further processed in order to in the end have the capabilities of recycling as much as the waste as at all possible. Waste management is also part of legislation which sets the ground rules to a lot of the requirements.[405] The key objective is to ensure that waste does not cause contamination of e.g. the soil at or around the industrial site.[406] Differences could be seen with the type of facilities as some of the facilities produce relatively more toxic waste, such as nuclear waste, and therefore it is necessary to have strict requirements as to how these are handled. In general, companies are encouraged to recycle as much as possible in the current climate and these industrial project sites are no different – reusing everything possible will also be a cost efficient method for the company themselves when they are in the position to produce e.g. heat out of their own waste. In a way it will end in a win-win situation if the company decides to take the approach to act

[403] Health Link British Columbia, https://www.healthlinkbc.ca/health-topics/tf4173, accessed 22.4.2020.
[404] Hannu Härkönen, 'Rakentamisen ympäristövaikutusten arviointi', RIL K143-1991, 115.
[405] Jätelaki 646/2011.
[406] Marja Ekroos, 'Ympäristövastuu, Opas yrityksille' (TT-Kustannustieto Oy 1995) 65.

accordingly. Some of the decisions even included a requirement explicitly stating that any waste that is able to be reused is not allowed to be burnt.[407]

All special or toxic waste that is produced has to be stored in airtight containers, as well as in agreed areas keeping different types of chemicals and materials separately from each other to mitigate risks. It has been regulated as well who the waste can be handed over to for disposal.[408] The surrounding areas have an impact on the waste processing as well as there is a difference if the project site is next to or on water front property, or inland. In our comparisons it should be noted though that even if all of the projects were not directly next to the sea, they were in the vicinity of various water areas.

Overall, no requirements could be found in relation to waste that could be considered as being too extravagant or unfair on the companies and their operations.

4.3. Water Areas and Water Related Requirements

In case the project site was near any sort of water area, there was bound to be requirements that posed obligations and restrictions in relation to water. Water is in a key role in various different forms – sea, river, ground water, surface water and sewage water. Requirements in relation to water is where it starts getting somewhat tricky. There are a lot of aspects that need to be taken into consideration with water, from drinking water to the status of fisheries and any and all of these combinations. Effect on fisheries may end up being an expensive part of the project as fisheries payments have been a common denominator in the projects that have seen to potentially or certainly impact the status of the fisheries.[409] These fishery effects have certainly stood out as one of the requirements that could arguably be setting too much responsibility on

[407] See TVO Olkiluoto and Fortum Meri-Pori.
[408] Jätelaki 646/2011, ch. 3.
[409] See Fennovoima Hanhikivi-1, Neste Naantali, Stora Enso Oyj, Fortum Loviisa and TVO Olkiluoto.

a company, which is definitely not there to do scientific research. More details of such will be given in the following chapter.

Environmental decisions in relation to water are evaluated by a number of various authorities depending on the size of the action[410] – obviously in the case of the large scale industrial projects it would not be sufficient that the matters were only considered by the county, whereas for building a summer cottage this would in most cases suffice. The cornerstone is that each company, and State, have the obligation to not cause significant harm to water[411] and this has also been codified in international treaties.[412]

Mainly the requirements in relation to water were related to how much the temperature can be increased due to coolant water being let back into the sea.[413] Increases are not allowed to be at a yearly average more than 12-14 ℃ but clear differences can be seen as to how warm the water let out can be – Loviisa can let out an average temperature of 34 ℃[414], Hanhikivi-1 40 ℃[415], Olkiluoto 30 ℃[416] and Naantali 28 ℃[417]. At least for someone who has no background in environmental sciences, a difference of 12 ℃ seems like a considerable amount when it comes to the temperature of water. However, as each decision comes with an explanatory note as to what the requirements are based on, it is notable that these reasons given do not vastly differ from each other and therefore explain where such temperature level differences come from. Considering this fact, as well as that no major petitions and complaints have been done by the companies for such requirements, for the purpose of this thesis we shall consider these differences to fall under ones that can be seen as justifiable. Perhaps it could also just be that for the functioning of these power plants these temperature differences are easy to maintain and therefore the energy and resources were not aimed at appealing these requirements.

Another water related requirement group is in relation to emissions going into the water once the water is released. These are somewhat differing based on the type of project site, as some sites clearly use more chemicals that come into contact with the water than others. For example phosphorus levels restrictions can be found in nine out of the ten decisions, with the only

[410] Tellervo Ketola, *Vesistövaikutusten arviointi lupamenettelyssä* (Edita Prima 2003) 7.
[411] Aline Baillat, *International Trade in Water Rigts* (IWA Publishing, 2010) 72.
[412] United Nations Convention on the Law of Non-navigational Uses of International Watercourses 1997.
[413] See Fennovoima Hanhikivi-1, Fortum Loviisa ,TVO Olkiluoto and Neste Naantali.
[414] Loviisa Environmental Decision 2009, 54.
[415] Hanhikivi-1 Environmental Decision 2016, 194
[416] Olkiluoto Environmental Decision 2006, 65.
[417] Neste EIA Decision 2018, 95.

exception being Lemminkäinen. However, it is notable that Lemminkäinen does not have any water processing, but they are to transport all sewage water to an appropriate facility where the emissions will be monitored and filtered.[418] pH levels are also monitored rather closely in the decisions. The emission levels do not seem to vastly differ from each other in the other nine decisions, so we shall not spend any more time going deeper into these levels. If the emission levels are over those agreed, this may result in the company becoming liable for damages.[419]

In a general sense, especially the projects that are power plants are located in the vicinity of large water areas as they need extremely large amounts of water for the functioning of these plants. It is more cost efficient to be able to take the water straight from the sea, rather than having to build extravagant infrastructure for the purpose of bringing in hundreds of thousands tons of water to the project site. But this also means that as the water has a direct line the processing of it has to be done with extreme carefulness to avoid any contaminations to the surrounding areas.

4.4. Animal Kingdom

To at least the surprise of the author, considering the size of these projects, the requirements in relation to the animal kingdom were extremely scarce. The reasoning could obviously be that the companies have been "smart from a far" and when looking into the possible project sites they have chosen ones that have the least amount of wildlife in the vicinity in order to avoid any major problems with the protection of the animals. Therefore, the majority of the animal related requirements were due to the water areas close to which the project sites were located – i.e. fish had the largest presence. As previously mentioned, fish were a rather conflicting group of requirements which will be looked at closer. However, even if it is not evident from the requirements, the animal kingdom will have to have been considered during the EIA process.[420]

[418] Lemminkäinen Environmental Decision, 2013, 19.
[419] Erkki J Hollo, *Vesioikeus* (Edita Publishing Oy 2014) 335.
[420] Paul A Erickson, *A Practical Guide to Enivronmental Impact* Assessment (Academic Press Inc 1994) 97.

The interesting part to note is that as the decisions included an explanatory note from the company, some of the companies had done and included research on the animal kingdom but these did not make it into the list of requirements given by the authorities.

Meri-Pori had included research and explanations on the impacts to fisheries in their application[421], but no requirements were set on them for the mitigation of impacts related to fisheries. Neste Naantali, Loviisa, Hanhikivi-1 and Olkiluoto all had dedicated parts to fish impacts as well but they were also set under requirements in relation to these.[422]

The Hanhikivi-1 decision was also set under requirements relating to fisheries, but it also had done research into other parts of the animal kingdom as well. The documents includes information in relation to benthos, seals, birds and frogs in addition to fisheries.[423] Explicit requirements were not imposed on any of the other members of the animal kingdom, although Fennovoima did subject measures for the protection of the moor frog by relocating them to a safer place, as it is an endangered species.[424] It could be that no explicit requirements were set as the relocation of these moor frogs was done prior to the environmental decision.

In addition to Fennovoima, the Fortum Loviisa decision had one other reference apart from fisheries – that to plankton in the area.[425] Fortum however did not find any major risks on impacts in relation and no reference to such can be found in the requirements.

4.5. Emissions

All ten of the environmental decisions made reference to different emission levels, how the substances should be handled to avoid emissions, what kind of chimneys were to be placed at

[421] Meri-Pori Environmental Decision 2005, 6, 56.
[422] Neste Environmental Decision 2018, 108; Olkiluoto Environmental Decision 2006, 69; Stora Enso Environmental Decision 2013, 73; Loviisa Environmental Decision 2009, 58; Hanhikivi-1 Environmental Decision 2016, 203-206.
[423] Hanhikivi-1 Environmental Decision 2013, 73-91.
[424] Fennovoima, Environmental Impact Assessment Report for a Nuclear Power Plant (Fennovoima 2014), 155.
[425] Loviisa Environmental Decision 2009, 26.

the project sites and so forth. These requirements were vastly different from each other in all of the decisions making comparing them extremely difficult. The only ones that could possibly be compared in a way that the results could to the slightest be trustworthy would be Hanhikivi-1, Loviisa and Olkiluoto as these are all NPP's and located on site areas that have similar qualities. The requirements for emissions included a lot of detailed levels, with some of the decisions having one third of the requirements being in relation to emissions.[426]

For the avoidance of confusion we shall not spend time comparing these requirements as they are so difficult to compare with each other that the result may be too distorted to actually be used as a reliable basis for the judgement of whether or not the requirements vastly differ from each other, and if there are such requirements that expect too much from the company behind the entire project. This does not mean that unfair requirements do not exist in the area of emissions, they are just too broad of an area to dive into within the scope of this thesis.

[426] See e.g. Neste Environmental Decision 2018.

5. Debatable Requirements

Throughout the conducted research and comparison it became evident that not all the requirements were such that they seemed to be completely justifiable off the bat. Some requirements seemed rather extravagant as a whole group, but some requirements you could see large differences with what was expected from one company in comparison to another with regard to the same "protections". This chapter will have a closer look on the requirements that authorities have placed that stood out from the hundreds of requirements as being unfair or not in line with each other.

On a general note one can at first already comment on the fact that just the amount of requirements varied between 28 and 69.[427] A clear correlation being in the fact that the newer the decision was the more requirements they had. This on its own is obviously a fact that distorts the comparisons somewhat as it is evident that with society going forward also more information and is gained adding on more requirements, which some may be from lesson learned in prior industrial projects. But this is also where it gets tricky. Evidently companies have to adapt with times and use best available technology, but imposing requirements that are more to prevent something that may happen in the future in a way no one else has before can be argued to be going beyond the scope of the company as the licensee of their project. Companies should not be held accountable to invent completely new procedures or conduct research that has no prior basis. Or at least so one could think.

These set requirements truly are a balancing act between the interests of the land, the nature and the society that belongs to it and the "future of industrialization". Industrial projects are a large part of the current economic climate and to an extent have to happen in order to aid society, but they just have to be done in such a way that aids sustainable development.[428]

[427] Least being in the Fortum Environmental Decision 2009 and most in the Neste Environmental Decision 2018.
[428] Patricia Birnie, Alan Boyle, *International Law & the Environment* (2nd edn, Oxford University Press 2002) 84.

5.1. Fisheries

The first requirement group that stood out as being varying with each other was the one in relation to the fisheries near the project sites. Fisheries requirements could be found in the decisions of Hanhikivi-1[429], Loviisa[430], Olkiluoto[431], Neste Naantali[432] and Stora Enso[433]. As these project sites were located near water areas and lead water back into these areas there is a direct effect to the overall climate of that water. This is mostly due to the temperature changes in the water which can be, as was described in chapter 4.3, up 12-14 ℃ warmer than what the organic temperature of the water has been. The changes in the water area have seen to cause an impact on the fisheries in the areas as well and these are being mitigated with set requirements.

5.1.1. Fishery Payment

The general approach is that the responsible company will have to pay a fishery payment which principal objective is to compensate for the loss of fish and for the purpose of mitigating any such loss through the release of coolant waters etc. back into the environment.[434] The interesting part is that these payments can differ quite vastly from each other. TVO is obligated to pay 10 000 EUR annually as well as one-off payments to the sum of 56 558 EUR.[435] For Neste the annual amount is only 3100 EUR[436] and for Stora Enso 4 160 EUR.[437] Fortum was also set

[429] Hanhikivi-1 Environmental Decision 2016, 205-206.
[430] Loviisa Environmental Decision 2009, 58.
[431] Olkiluoto Environmental Decision 2006, 69.
[432] Neste Environmental Decision 2018, 108.
[433] Stora Enso Environmental Decision 2013, 73.
[434] Vesilaki 587/2011, 14§.
[435] Olkiluoto Environmental Decision 2006, 69.
[436] Neste Environmental Decision 2018, 108.
[437] Stora Enso Environmental Decision 2013, 73.

under an annual payment of 10 000 EUR.[438] Both NPP's are subject to a 10 000 EUR payment so one would assume that Hanhikivi-1 NPP would be at the same, or at least close, to such payments. However, in the case of Fennovoima an annual fee of 3 000 EUR was set for those years that there is construction in the water front.[439] In addition, Fennovoima has to yearly plant fish into the sea – at whopping amounts of 116 000 whitefish (at least 10 cm of length) and 1000 sea trout (at least 18 cm of length).[440] This is vastly different than just making an annual payment. Consideration should also be given to the amount of fish that has to be planted. 17 000 kilograms of whitefish was fished out of the sea in 2011[441] which is roughly the equivalent in fish. The loss of fish is not estimated to be anywhere near 100 000 so seems like a large number of fish to be planted "to compensate".

The question becomes is it really justifiable for Fennovoima to have to plant such a large amount of fish, when other (similar) projects only have to make payments. A set payment is a tangible amount, which can be easily set aside for each year, whereas planting fish is a larger operation and is subject to influxes of the fish prices and planting operations. It is also unclear why the other projects are able to make simple payments whereas Fennovoima was not granted this opportunity, even though it proposed an annual payment of 20 000 EUR[442], which is double to what the two other NPP's reviewed here pay. The Lapland ELY-Centre has also stated that they do agree to this 20 000 EUR amount but would prefer the planting of fish, meaning that the amount Fennovoima has offered cannot be seen as being e.g. too low.[443] A correlation here can also be made that for the case of Fortum and the Loviisa NPP where the planting of fish was allowed to be changed into an annual payment by the court.[444] No specific explanation is given as to why Fennovoima is set under the obligation to pay an annual fee as well as plant fish.[445] It is undeniable that also Fennovoima needs to be subjected to some sort of mitigation actions but it seems truly unjust that the mode of mitigation is vastly different than what is imposed on other companies.

[438] Loviisa Environmental Decision 2009, 58.
[439] Hanhikivi-1 Environmental Decision 2016, 205.
[440] *Ibid*, 205-206.
[441] Fennovoima, Ydinvoimalaitoksen ympäristövaikutusten arviointiselostus (Fennovoima 2014), 130.
[442] Hanhikivi-1 Environmental Decision 2016, 147.
[443] *Ibid*, 162.
[444] VYO 72/1999.
[445] Hanhikivi-1 Environmental Decision 2016, 224.

The general consensus on changes to fishery requirements seems to be somewhat controversial in the general sense in any case.[446] Fortum has also been to the Supreme Administrative Court to find clarity to the compensations in relation to fisheries and their requirements.[447] As there are a number of cases in relation to these requirements that have found themselves all the way in KHO[448] it implies that there is not yet a confirmed direct view on these matters.

5.1.2. Research on Fish Stock

Fennovoima has also been obligated to conduct research as to where the mating and migratory areas of the anadromous mullet are in the vicinity of the project site.[449] In addition, if it is seen that the mullets migrate from the project site to the sea, research has to be done as to what quantities of anadromous mullet fry can be expected to be migrating from Liminkaoja to the sea.[450] This research has to also show the size of the anadromous mullet fish stock and fry production along with how to mitigate any effect to such.[451]

The issue which arise here is the scope of this research – there is no standardized way as to how one can evaluate the quantities of anadromous fry in a certain area. It has also not been able to be proven that there even is a mullet stock presence near the project site in Pyhäjoki.[452] Therefore, the entire requirement seems extravagant as has been discussed by the Supreme Administrative Court of Finland in case 2019:55.

Fennovoima's position here was that to identify such mullet stock quantities would be next to impossible as no such quantitative measurements have indeed been conducted prior, meaning that it would be up to Fennovoima to come up with a way how to conduct such research as a

[446] VHaO 7.6.2019 nro 19/0139/2.
[447] KHO:2017:508
[448] KHO:2019:172, KHO:2016:84.
[449] Hanhikivi-1 Environmental Decision 2016, 201.
[450] *Ibid*.
[451] *Ibid.*
[452] KHO:2019:55.

whole.[453] Here comes into play the question of whether or not a company specialized in industrial activities can be obligated to embark on such scientific research that they have to firstly come up with if the case truly is that there is no other prior knowledge on how these activities should be conducted. This is a balancing act for the Courts when deciding how far the innovation and creation of new processes can truly be set as an obligation on companies when the aim is to protect the environment. Obviously it can be seen that the Supreme Administrative Court was dismissed Fennovoima's appeal and the requirement as such was upheld.[454] Only a few words were removed from the requirement but the need for fish stock research remained unchanged.

Similar requirements for such extensive fish stock research could not be found in any of the other environmental decisions that had included requirements on the minimization of effects to fisheries. A common denominator in the decision evolvement could be seen that the newer the decisions in general there was more requirements than in the older ones and these requirements were also more detailed. But this should not be an "excuse" for the evolution of the requirements into such that they require significant innovation in order to be fulfilled.

Companies are set under corporate responsibility and social responsibility[455], including towards the environment, but this does not in itself indicate a responsibility to be in the forefront of bringing the environmental protection to new spheres. Considering the amount of similarities in the examined environmental decisions those that stand out bring out the question as to whether it really is justifiable – in this case the justification for the fish stock research requirement does not seem to be foolproof. Even in the decision of the Supreme Administrative Court it was stated that it had not been able to be proven that mullets were present in the vicinity of Pyhäjoki and therefore it seems odd that the testing of mullet stock can still be implemented on the basis of mullet presence in the Bothnian Bay.

Overall, when it comes to the fisheries it can be seen that the authorities do not have an entirely systematic approach to the setting of requirements and what the purpose and outcome of these requirements in the end are. It is unclear what the motives of the mullet stock requirement for Fennovoima was, and therefore it can easily be seen as perhaps being a larger burden than what can be seen as being fair and just in the situation. The animal kingdom, including the fish,

[453] VHaO 20.12.2017 nro 17/0416/2.
[454] KHO:2019:55.
[455] David P Lawrence, *Environmental Impact Assessment, Practical Solutions to Recurrent Problems* (John Wiley & Sons Inc 2003) 42.

should be protected as far as possible but environmental decisions should not be used as a method of making the current situation better on the expense and risk of prolonging the industrial projects in Finland. Industrial projects are a large bonus for the economy, and with the amount of delayed industrial projects as is[456], the authorities should not aim to set requirements that set the basis for completely new innovation and through that have an effect on economic aspects.

5.2. Sewage Waters

Sewage water was brought up briefly prior in Chapter 4.2. as it was a requirement that came up in all ten of the environmental decision that we have been comparing. However, not even the sewage waters have come without issues. When looking at the environmental decisions given to some of the companies it is clear that the processing of sewage water differs from each other largely. There are sets of requirements that are rather general in nature, whereas some of the requirements set rigorous boundaries on what kind the sewage water should be and what it can contain and in what quantities.

The requirements differ from only stating that any sewage water has to be taken to a separate processing facility[457] to having specified on a monthly and/or yearly average how much of a certain type of chemical or mineral can be found in the water. However, these limits are vastly different in the decisions[458] which brings the question as to how is it justifiable to have companies under such different requirements when the subject is common to all – water. Obviously it should not be disregarded that the sewage water will have different concentrations based on the project site, but it is still somewhat questionable why one company can be told to keep certain daily levels[459] when another is only told that there needs to be a 90% purification

[456] See for example the case of the Olkiluoto-3 NPP which is currently delayed over 10 years from the planned date. Yle, Antti Laakso, Olkiluoto 3 lykkääntyy jälleen – säännöllinen sähkötuotanto alkaa 2021 https://yle.fi/uutiset/3-11126984, accessed 2.5.2020.
[457] Lemminkäinen Environmental Decision, 2013, 19.
[458] Limits are shown using milligrams per liter, kilogram per day as well as percentages.
[459] Biovakka Environmental Decision 2015, 39.

rate and a yearly average in regards to phosphorus.[460] The 90% purification rate was found in a couple of the decisions[461] but that is only 30% of the assessed decisions. Surprisingly, not even all the nuclear power plants had this purification rate included, when the Hanhikivi-1, Loviisa and Olkiluoto decisions have been the "easiest" to compare reliably throughout the process of this thesis.

When a company has to ensure that certain levels are kept, this means that these levels need to be monitored on a continuous basis by the company through the use of a variety of machines, testing methods and analysis.[462] Especially when the company is set under testing, for at the best case, tens of substances[463] this means a rigorous testing maneuver which needs to firstly be planned and a process created and secondly executed. This requires man power as well, but the initial issue here comes down to the process of how these biological surveys have to be done so that they itself do not harm and burden the environment.[464] The process has to be such that the readings do not interfere with each other and are accurate enough that it can easily be proven that the project site is adhering to all its requirements and keeping the levels in the sewage water at those set to the by the authority.

Overall, anything in relation to these environmental decisions and requirements within can be seen as being a balancing act between the rights of the company and the environment, but it would make more sense if the requirements were unison when compared to each other – even at a level that they would be somewhat comparable although they can never be completely identical.

As each decision comes with justifications to the set requirements by the authorities these illustrate to an extent that even the justifications do not vastly differ from each other to the magnitude that they would explain why the requirements are so different. Some of these come directly from legislation[465] and are therefore undisputable, but the levels just do not add up when set side by side. The process should be clear and equal, especially since there can be

[460] Meri-Pori Environmental Decision 2005, 60.
[461] See the decisions for Meri-Pori (p. 60), Olkiluoto (p. 65) and Loviisa (p. 54).
[462] Kari Marttinen, Salla Saastamoinen, Sanna Suvanto, *Yrityksen ympäristövastuu* (Kauppakaari Oyj 2000) 150-152.
[463] Neste Environmental Decision 2018, 95.
[464] W Jack Grosse, *The Protection and Management of Our Natural Resources, Wildlife and Habitat* (Oceana Publications Inc 1992).
[465] Ympäristönsuojelulaki 527/2014, 5§, Merensuojelulaki 1415/1994, Valtioneuvoston asetusvesiympäristölle vaarallisista ja haitallisista aineista 1022/2006 as amended by 868/2010, Valtioneuvoston päätös eräiden ympäristölle tai terveydelle vaarallisten aineiden johtamisesta vesiin 363/1994.

criminal charges for not obliging to these.[466] A system that asks for clear results should be able to set clear requirements, and in the end, not ones that can be debatable in Court and provided on an either or basis.[467] It is has been seen that the Court have had to change the requirements to be such that the requirements set can actually be upheld and not setting the company to a standard that is unachievable.[468]

5.3. Noise Mapping

Noise in the general sense was a requirement we had a look at previously in chapter 4.1. It is a common requirement to all ten environmental decisions and as described prior the main requirement in relation to noise is largely similar, with the differences of allowed decibels being only a minor concern as these levels seemed to follow a somewhat similar train of thought. However, four of the decisions stood out as they had requirements for further noise mapping and planning. These were Pori Energia, Neste Naantali, Seinäjoen Energia and Stora Enso. Notable is that none of the nuclear projects are included in this list although they had some of the lowest acceptable noise levels.

Firstly, there is an open ended requirement which states that noise levels have to me decreased from current – no other specifications.[469] This in itself seems odd, but at least it is easily arguable that the company has adhered to this even if the decrease they achieve is minor. Secondly, in the remaining three there is an obligation to conduct noise mapping for the entire project site.

These mapping activities do however differ from each other as well as the extent of these mappings is different in each decision. Seinäjoen Energia has to undergo noise mapping within 12 months of the operation date, after which they need to provide the appropriate ELY Centre

[466] KKO:1991:183.
[467] KHO:1991:1
[468] KHO:2013:164.
[469] Neste Environmental Decision 2018, 96.

and Seinäjoki municipality a report of these findings.[470] Similarly Pori Energia has the same amount of time to produce and submit the mapping and its report, but their mapping is subject to further restrictions.[471] However, for Pori Energia emphasis is placed on the K4 Bio Boiler and the report has to include a detailed expert opinion on the various types of noise that the K4 Bio Boiler causes, and how these different types affect the surrounding environment.[472] Every time a new piece of equipment is taken into use these have to be done again, remembering to consider also high frequency noises and impulsivity.[473] Lastly, in the case of Stora Enso, noise mapping has to be done every three years – or even earlier if there has been noted any change in noise levels or any new equipment or processes have been taken into use.[474] They have to even complement with machine specific mappings if the machine could be cause of disruptive noise.[475]

Noise mapping makes sense – that is not something that can really be argued – however it is surprising that the extent of noise mapping can differ so much in these projects. Overall, the entirety of the project site has to stay under a certain decibel level in all ten of the examined industrial projects. Therefore, the question is in a general sense why does it matter how much one specific piece of equipment is producing noise. If the overall noise levels stay under those that a prescribed it should not make a difference which piece of equipment is making the noise. Making the testing to specific machinery requires more noise mapping than that of the entire project site and is therefore yet again a new process that has to be implemented in the entirety of the project.

Moreover, yet again there is not enough justifications showing as to why actually the noise requirements can be so different in the projects. This seems to be the overall situation in a lot of the requirements in these decisions though. Requirements are obviously justified, but the same justifications can be used for a variety of requirements which makes it harder to understand the differences.

[470] Seinäjoen Energia Environmental Decision 2013, 35.
[471] Pori Energia Environmental Decision 2018, 53.
[472] *Ibid*.
[473] *Ibid*.
[474] Stora Enso Environmental Decision 2013, 69.
[475] *Ibid*.

6. Is There Such A Thing as Too Much Company Responsibility?

The answer to such a big question is not self-explanatory, that at least is extremely clear. When it comes to some of the requirements it could be argued that there is too much responsibility but then also there are some that one could even argue could have more responsibility inflicted on the company. Perhaps the issue in the end might be that the justifications given are not clear and detailed enough to actually give a bigger picture as to why some of the requirements with similar justifications are so vastly different. Overall, the amount of requirements in the decisions differ to a large extent as well with emphasis being on different areas. The main categories of requirements are definitely noise, water related requirements, waste management, the animal kingdom, emissions and reporting. The thesis did not have a look at the reporting requirements as they were mostly self-explanatory and did not have anything included that should deserve further analysis. The list of groups is also not exhaustive.

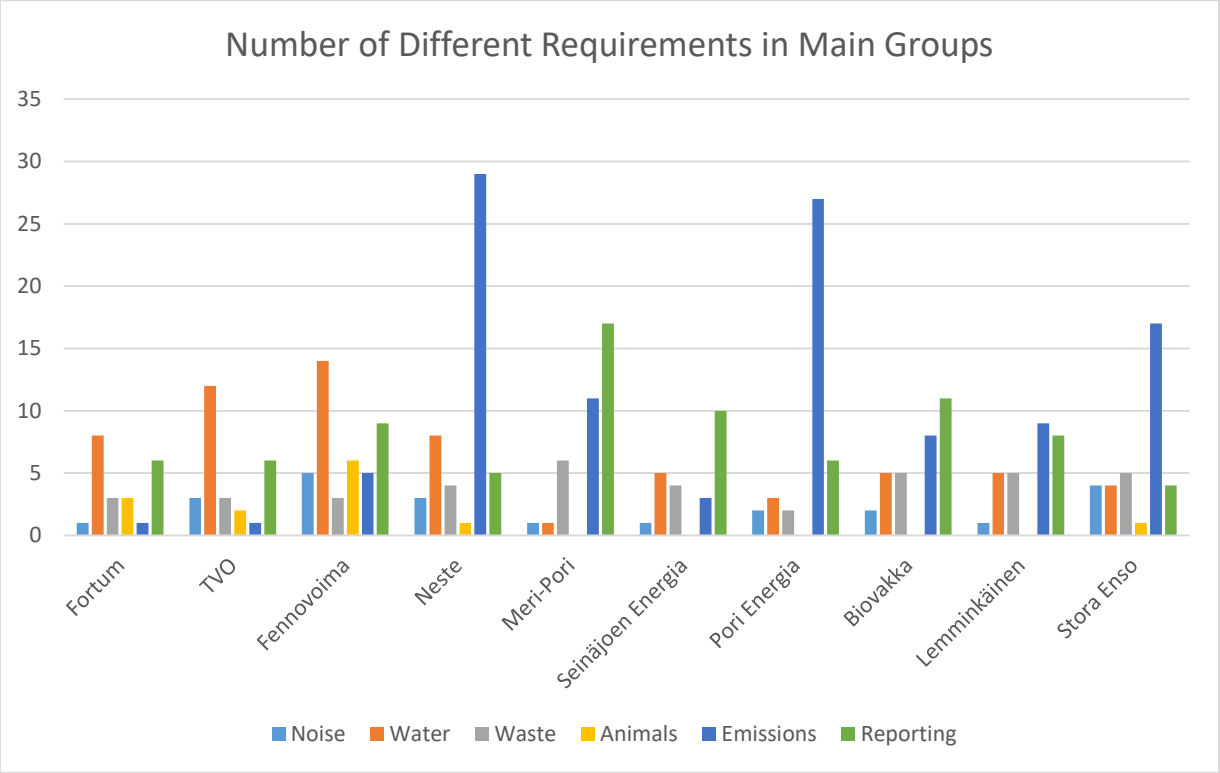

Table 2. Distribution of requirement groups in the analyzed decisions

All ten of the assessed decisions follow the same train of thought and the groups of requirements could not be seen to vastly differ from each other. As Table 2 presents, the amount of requirements in each group however could be vastly different. To illustrate, Neste had 29 different requirements on emissions whereas TVO Olkiluoto only had one. This is partly explained by the timing of the decisions, but even then the growth to amounts is not completely linear to the given decisions and their years.

6.1. News Projects Come With New Requirements

It can relatively well be drawn that the newer the decision is, the more detailed, and perhaps even overcautious, the requirements are. There is clear correlation in the ten decisions which have been given between the years of 2005 and 2018 that the number of requirements is on the rise. Even if decided that different types of projects cannot be compared, this can still be shown through the fact that Fortum Loviisa's 2009 decision had 28 requirements whereas seven year later Fennovoima received 50. This is almost double the amount.

To an extent this is justifiable and understandable. This is the general consensus of how the world works – as the world evolves all the aspects within it have to evolve as well. With new technologies come new risk for the environment that should be taken into consideration while conducting the activities. This should always be the starting point that the decisions should be based on how the situation is at that specific point in time. But at the same time economic growth should be promoted, as it has direct correlation to living standards.[476] For this, companies will always have responsibility for.

Nevertheless, the evolvement should not purposefully go past what is the current situation and head straight to the unknown future, as was the case in Fennovoima's fishery requirement. The justifications for imposing a requirement in relation to something that has not been done before should be at a very high standard before such a requirement can be deemed acceptable. It is

[476] Nick Hanley, Jason F Shogren, Ben White, *Introduction to Environmental Economics* (Oxford University Press 2001) 120.

indeed extremely important to stick with the times but inventing something new is just not an appropriate requirement to set on any industrial project. The environment is part of our cultural heritage[477] and should be treasured as far as possible, just not at the expense of a company who has no place conducting such research. There is clear importance in taking responsibility for the future, but a company should not have to invent the future.

6.2. Silent Acceptance Through Uncertainty?

What could be seen during the research of this thesis is that these decisions are not easily comparable. The environmental decisions are so dependent on the location of the project site that it is extremely hard to compare whether a requirement is different from others merely because of the location, or if it is indeed asking for a lot more than it should. Comparisons aid in the understanding of the decisions and processes related, but with these decisions the comparability is not fully present. The reality could indeed be that companies are accepting erroneous requirements merely because they are not able to fully assess whether or not the requirement is part of "the norm" of the process and they just do not understand it. Perhaps silent acceptance is resulting from the uncertainties. Closely defined tight conditions are easier to set and authorities are often keen to set such as ways of thorough assessment.[478]

A definite problem for example in the case of Fennovoima was the lack of similar projects. Usually one cannot make a founded conclusion of how something should be interpreted if there is not enough basis for research. Finland only has three nuclear project sites (all considered in this thesis) meaning that there is not a lot of data available. The same applies to a variety of project sites – each are assessed on such an individual basis that it is truly difficult to make substantial discoveries into a specific requirement. It is easy to compare the groups and what

[477] Erkki J Hollo, Ympäristönsuojelu- ja luonnonsuojeluoikeus (Talentum 2004) 55.
[478] Moritz Reese, 'Climate Change adaptation in water management – regulatory challenges and approaches' in ed. Erkki J Hollo (ed), *Water Resource Management and the Law* (Edwar Elgar Publishing Limited 2017) 306.

should be included, but the scrutinizing of a single requirement through comparison is at current extremely difficult.

Overall, with the comparisons that could be made it could be drawn to an extent that some of the responsibilities set on companies are arguably too large at scale. Innovation is good, but it should not be the basis of an unfounded amount of responsibilities. The given environmental decisions can always be appealed[479] but when the companies may not be able to find basis for their appeals it will become tricky.

Basis is often found in relying on the court proceedings and how courts have seen to decide upon the matters related to environmental decisions. The issue with this is that court hearings on particular single requirements are rather scarce which may be part of the silent acceptance culture in this field. Trials do happen in relation to environmental decisions and their appeals but it cannot be said to be an extremely popular trial topic, especially on the detailed level. Court proceedings are time consuming and expensive, so it could be that sometimes it is cheaper to accept the requirements rather than to start the fight over it and risk delaying the entire project as a result.

Taking into consideration the fact that often industrial projects are valued at multiple billion euros, the gain that might be received through litigation is such a small fraction in the budget that it is simply not worthwhile. Any litigation action will require the legal expertise to run the action, court fees, most likely engineers or scientists to provide for the technical details of the complaints and so forth. If the aim is to dispute a requirement that will cost the company for example 10 000 EUR it is just clear to all involved that the company will be let off cheaper if they decide to not appeal and silently accept the requirement.

Such decisions however will lead to the identified issue of not a vast number of appeals and court decisions. But in the end it will be understandable that the companies do not wish to embark on these "legal fights" that may take years in time for very minor victories. Even if it would aid the future of the area.

Whereas companies may choose to not appeal requirements they find unfair through silent acceptance, it is also possible they do so as they do not have significant fears of repercussions. There have not been a significant number of large sanctions imposed in Finland for those

[479] Kari Kuusniemi, Vesa Majamaa, Pekka Vihervuori, *Maa- vesi- ja ympäristöoikeuden käsikirja* (2nd edn, Tietosanoma Oy 2000) 426.

companies who breach their environmental licenses. Such criminal trials have indeed happened but they do not come often. In 2019 the Supreme Court decided on the Talvivaara case[480] which was highly reported at the time due to its nature. Although convictions were given in this case, the Supreme Court was split 3-2 as to whether a breach had happened considering that the emission levels were not clearly defined in the license.[481] Maybe the truth simply is that this area of requirements is in such a need of reform that some of the requirements take leaps that are larger than needed and even the companies do not know how to react to these.

[480] KKO:2019:102.
[481] *Ibid*.

7. Conclusion

During the course of this research it became quite evident that this was a difficult area to make substantial conclusions on. This might partly explain why it was challenging to find new material and literature on the subject. Environmental impacts and environmental matters in general have a large amount of literature and research done on them but research specifically aimed at the licensing process and its evaluation could not be found. Despite the difficult starting point of this research there could be some conclusions drawn as well, although they cannot be generalized to fit all industrial projects and their licenses which needs to be remembered.

The main issue faced was the low comparability of the decisions when the projects were of different nature. As the justifications for requirements were not detailed enough to provide a solid foundation it was problematic trying to assess whether the requirements were based on justified reasoning. This however could further be discussed in research as to whether or not the companies are given enough explanatory notes for all the responsibility that is being instilled upon them. In order for this to be more reliable the scope should be narrowed down to a specific type of industrial project and preferably in vastly similar locations. For example, a clearer picture of the requirements and their differences could have been drawn if emphasis was given to only compare the Fennovoima Hanhikivi-1, Fortum Loviisa and TVO Olkiluoto decisions. These are projects that are similar in nature and therefore the requirements should be relatively similar. Even here an issue could be seen with the fact that the Hanhikivi-1 decision was given seven years later than the previous NPP related decision. It would be easier to understand the evolution of requirements if there were a larger number of decisions within shorter periods of each other. It became apparent that even different types of energy facilities were not easily comparable and that is where the issues lied in the end.

Nonetheless, to an extent we can conclude that there is too much responsibility set on companies in relation to some of the requirements. This conclusion cannot be made for an entire group of requirements, but for single requirements it can be argued. A requirement should not be such of nature that it is involves a completely new inventive step – the method should already be

apparent and available. If companies were more eager to require justifications for single requirements there may be more discussion on the matter and through that larger reform and practices. As the companies are the ones who are the subject of these decisions they need to be proactive in also standing up for themselves and their rights. If the courts had to deal with more cases digging deep into the core of the requirements there could be new revelations made and more open discussions.

The results of this thesis will not give a directly applicable basis for the community but it may act as an instigator for further discussion and lead as a sample as to narrowing down the compared decisions in order to receive a better outcome. It is an important question to find the balance between economic growth and the environment and to somewhat make decisions as to who has to bear the burden of evolving industrial projects to be more sustainable and socially responsible.

To conclude, although the results are not directly applicable, this can be seen as a moment of "clarity" to realize that there is a lot of discussions that can and should be had in relation to the licensing of industrial projects and corporate responsibility. The company might be an easy tool to use for evolvement of the industry, but whether or not this is the right approach is definitely debatable in the end.